ENGINEERING NEWS-RECORD

A McGRAW HILL PUBLICATION

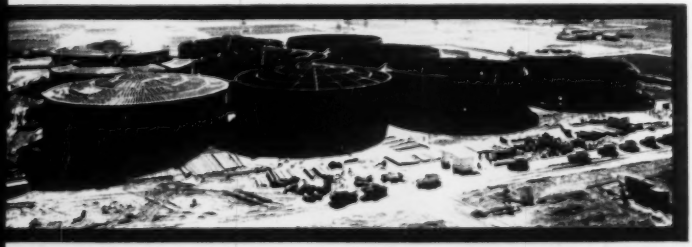
Fast Growing Long Beach Needed Water—and plenty of it!

The past 30 years have seen the population of Long Beach, Calif. boom from 142,000 to over 250,000 . . . a 72 per cent increase. Such growth naturally puts a strain on most municipal facilities . . . and the Long Beach water system was no exception.

Before the city could take steps to relieve this situation by installing additional water storage facilities, two difficult construction problems had to be overcome. Allowances had to be made both for ground settlement caused by nearby oil drilling, and for the possibility of earthquakes.

City engineers went to work and, after considerable experimentation, came up with the answer—or actually a dozen answers. They recommended building 12 specially constructed welded steel reservoirs on Dominguez Hill. Each of these tanks holds 3,300,000 gallons of water, and together they boost the gravity water supply of Long Beach to 100,000,000 gallons.

The fabrication and erection of these 12 specially designed reservoirs illustrates our versatility in solving unusual storage problems. You can make use of this experience by writing us the next time you have a storage problem.



Erection view of 12 Horton welded steel tanks 152 ft. in diam. at Long Beach, California. The shells are made up of five rings and have a depth of 35 ft. The lower course is $\frac{7}{8}$ in. thick and the thickness of the top course is $\frac{1}{4}$ in.

Atlanta, 3 . . . 2125 Healey Building
Birmingham, 1 . . . 1520 North 50th Street
Boston, 10 . . . 1012—201 Devonshire Street
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Houston, 2 . . . 2109 C & I Life Building
Los Angeles, 17 . . . 1511 General Petroleum Building
New York, 6 . . . 3311—165 Broadway Building
Philadelphia, 3 . . . 1623—1700 Walnut St., Building
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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

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"Can't be beat for guts and roaring get-away"

WHEN you want the dope on scraper performance . . . the kind that gets the job done in schedule-trimming time . . . ask the operators. They're the boys who know to the last ounce what you can get out of a machine . . . and what you *should* get. They know an easy-operating, high-producing rig when they see one. That's why so many operators agree with Motor Scraper owners when it comes right down to choosing a scraper on the basis of performance, trouble-free operation and big production. Get the complete story from your LaPlant-Choate distributor.

Says: BILL CLEMENS of Northboro, Mass., TS 300 operator for BAYER & MINGOLLA Construction Company of Worcester, Mass.

BILL ADDS, "What we need on this job is a dozer for each machine because I make my haul, spread my load and am back waiting on the dozer every trip."

OPERATORS LIKE THESE LaPLANT-CHOATE FEATURES . . .

Positive, double-acting hydraulic steering for easy, effortless operation.

Big 4-wheel air brakes—22" x 7", for absolute safety at maximum operating speeds.

280 HP or 275 HP (your choice of either Buda or Cummins engines) for slugging power when it's needed.

Big tires—24.00 x 29, with plenty of traction and flotation.

High speeds—over 22 mph that cut valuable seconds off cycle time.

Big capacity—14-cu. yds. struck and 18-cu. yds. heaped means more dirt hauled in fewer trips.

Here's Another Operator's Viewpoint

Donald A. LaVigne of Worcester, Mass. says, "I've run every kind of scraper made and I'll take LaPlant-Choate any day. They're not only fast, they're safe. Another thing about them, I don't feel all beat up after running one all day. No more tiring than driving my car."

Don operates one of Bayer & Mingolla's fleet of six TS 300 Motor Scrapers.

LaPLANT CHOATE

MANUFACTURING CO., INC. ® CEDAR RAPIDS, IOWA, U. S. A.

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.

Hydraulic and Cable-operated Dozers.

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Performance tells...and since 1907 precision-engineered LEUPOLD instruments have been used the world over. When you use LEUPOLD Levels you are assured of the greatest accuracy modern research and manufacturing can produce — plus time-saving convenience and versatility which no similar products can give.

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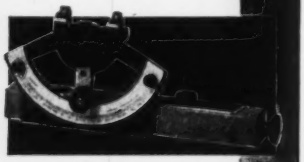
Accuracy and convenience in a small package! This practical, easy-to-use Level measures 5¼ inches overall length with ¾ inch outside diameter. Exclusive LEUPOLD bubble magnifier adjusts internally to the user's eye, eliminating constant refocusing. Sealed against dust and moisture. Furnished in handsome saddle leather case. $1[illegible]



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Exclusive patented design permits changing scales without removing and reversing the frame. Thumb screws hold all scales in milled slide, and any scale can be quickly superimposed on others for immediate use.

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MODEL A (Choice of any 2 scales) $2[illegible]

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Send literature on ☐ LEVELS ☐ COMPASSES.
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ADDRESS_____
CITY_____ ZONE____ STATE_____

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PORTLAND 13, OREGON

ENGINEERING NEWS-RECORD

Member ABC

Volume 148 APRIL 3, 1952 No. 14

WALDO G. BOWMAN
Editor

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UNINTERRUPTED service means lower cost per cubic yard, lower cost per operating hour, over-all lower cost that adds up to important savings.

That's why Goodyear's Sure-Grip tire is *First Choice* with cost-conscious construction men. Its specially engineered O-P-E-N C-E-N-T-E-R tread and extra-massive, balanced lug bars make it *the* tire for drive-wheel traction, make your equipment earn more for you!

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"THE GREATEST STORY EVER TOLD"
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Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Bridge over the Mississippi River, Hastings, Minnesota, 2600 tons fabricated and erected.

built by down-to-earth methods

saves you money, saves you time!

3 HUGE FABRICATING PLANTS OPERATE AS A UNIT

- Clinton Bridge Corporation
- Gage Structural Steel Corporation
- Midland Structural Steel Corporation

The bridge you see here in the course of construction is over the mighty Mississippi River at Hastings, Minnesota.

Have you noticed what's different about the erecting technique? Sure you have . . . it's the speedy water-level method of raising and joining the members, instead of the usual slow inching of erecting derricks over newly laid sections at the bridge floor level.

Exclusive construction innovations, with modern fabricating short cuts which can be carried on simultaneously in 3 plants operating as a huge manufacturing unit, combine to save you time and money.

Our engineering-estimating department would like to quote on your jobs wherever fabricated structural steel is specified. Send your plans and specifications to us.

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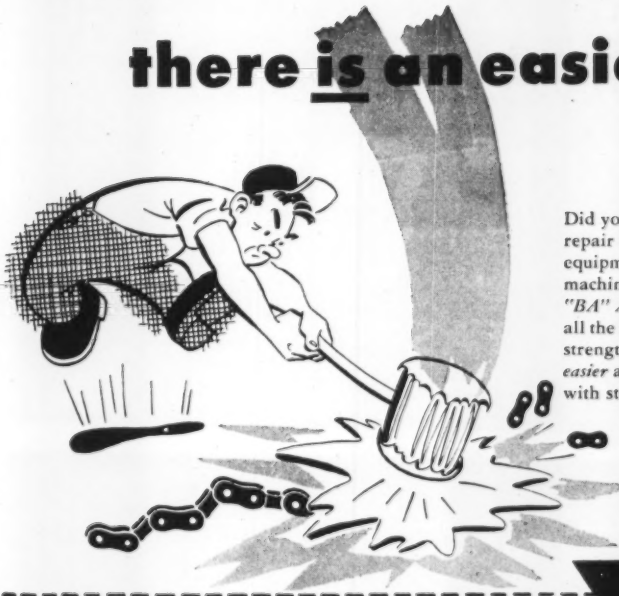
Fabricators and erectors of structural steel for highway and railroad bridges; Industrial, office, school, and government buildings; Airport structures; Harbor facilities.

there is an easier way!



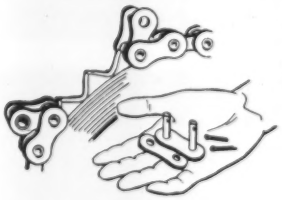
Did you know the job of assembly, disassembly or repair of the roller chain drives on your heavy equipment can actually be *easy*. It can . . . if your machines are equipped with Baldwin-Rex® *"BA" Assembly* Roller Chain. With "BA"* you get all the advantages of *riveted* roller chain . . . high strength, long life, low cost . . . plus even *easier* assembly, disassembly and repair than with standard cottered chain.

Look at the illustrations

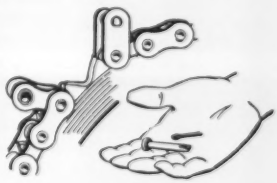
. . . there's no doubt about it . . . the "BA" way is the easy way . . . the time-saving way . . . the money-saving way

"BA" means Baldwin Assembly

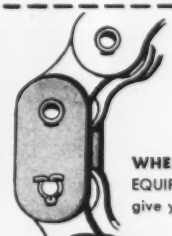
With standard roller chain, in order to take the chain apart in the field, you must drive out the entire pin link with hammer and punch. There is always the danger of damage to chain parts as the entire pin link is driven out. Assembly presents additional problems. The two pins must be driven back into the chain while one or more side plates (depending on the number of strands) are held in position. You almost need 3 hands to do the job.



With Baldwin-Rex "BA" Assembly, it's an entirely different story. All you have to do is remove the cotter and drive out the *single pin* of the special "BA" connector link. The other pin stays firmly riveted in place. No danger of damaging parts. Chain is cut by removing only 2 parts . . . the cotter and the single pin connector. To put the chain together, just put the side plates and roller links in place on the sprocket, insert the single pin connector pin and secure with the cotter. That's all there is to it!



For all the facts on "BA," send for our Bulletin 50-6. Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.



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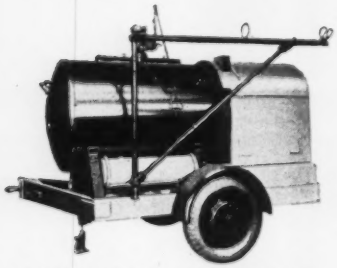
HOT OIL

ON THE JOB FASTER-WITH
LESS WORK-LESS FUEL-LESS WATER

with Cleaver-Brooks Equipment . . .

TANK-CAR HEATER

A Cleaver-Brooks Tank Car Heater is the starting point for fast work on any construction project. A faster job means man hours saved — contracts completed on time and without penalties. Designed for fast steaming, this unit gives you 125 lbs. steam pressure in 20 minutes with high heat transfer and low fuel consumption. Available in two sizes, skid or trailer mounted—Two car heater (28 bhp), Three car heater (42 bhp).



PUMPING BOOSTER

The Cleaver-Brooks Pumping Booster heats only the amount of material required — not necessary to heat entire car. No steam or water required for operation with this oil fired, high efficiency unit. Cleaver-Brooks pumping boosters heat to high temperatures faster through the exclusive flow-equalizer feature. Available in two sizes, skid or trailer mounted — No. 1 Booster, capacity approx. 300 gph, temperature raise 25 to 35°F., No. 2 Booster, capacity approx. 350 gph, temperature raise 45 to 55°F.

It all sums up to more work and more profit with a Cleaver-Brooks Tank Car Heater or Pumping Booster. Write today for further information.

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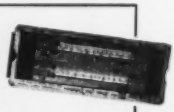
Write on Your Business Letterhead . . . For the Bituminous-Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs. and tons based on area and depth of area to be covered.



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STEAM BOILERS • OIL AND BITUMEN
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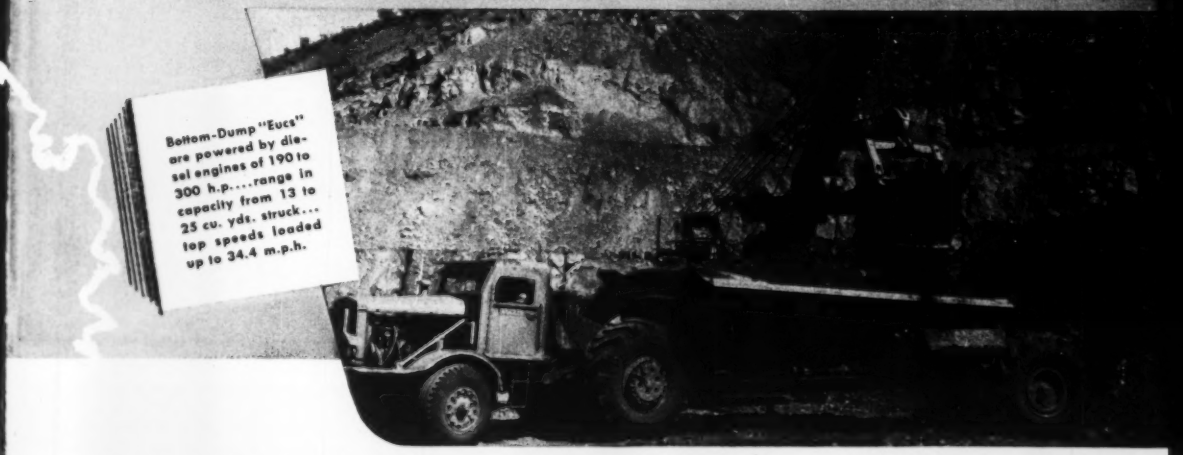
PROFITABLE PERFORMANCE ...TODAY AND TOMORROW


Bottom-Dump "Eucs" are powered by diesel engines of 190 to 300 h.p....range in capacity from 13 to 25 cu. yds. struck... top speeds loaded up to 34.4 m.p.h.

Euclids are engineered and built for long life and dependable performance in off-the-highway service. Their rugged staying power is a major factor in assuring low cost production on a wide range of jobs.

Some of the reasons for the outstanding performance of Euclids are ample power and traction for steep grades and tough roads, fast travel speeds with large capacity payloads, less down time and low maintenance and operating costs.

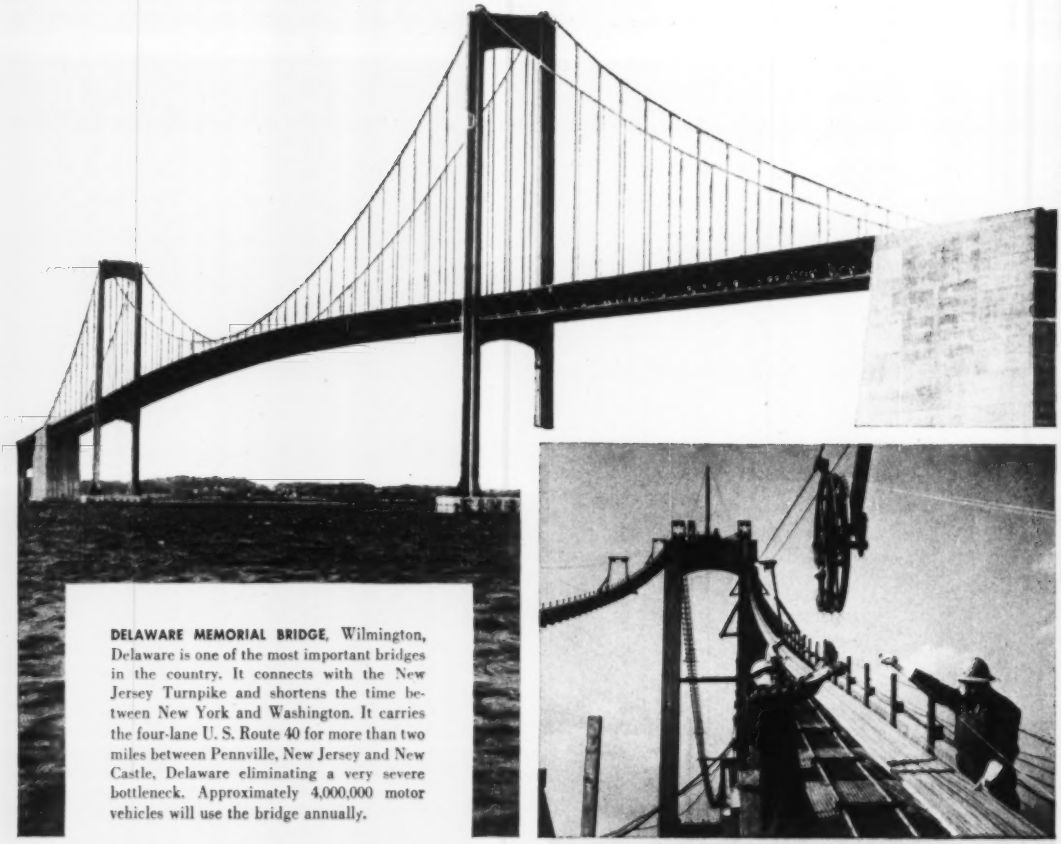
Whether you are building dams, levees, airports or roads, or moving material in open pit mines, quarries or industrial work, get in touch with your Euclid Distributor. He can show you how to get more loads per hour at more profit per load.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID CODE: BENTLEY

EUCLIDS

The bridge that raised itself



DELAWARE MEMORIAL BRIDGE, Wilmington, Delaware is one of the most important bridges in the country. It connects with the New Jersey Turnpike and shortens the time between New York and Washington. It carries the four-lane U. S. Route 40 for more than two miles between Pennville, New Jersey and New Castle, Delaware eliminating a very severe bottleneck. Approximately 4,000,000 motor vehicles will use the bridge annually.

SUSPENDING THE FIRST CABLES. Before any spinning of the main suspension cables could begin, four 2-inch American Tiger Brand Wire Ropes were strung from anchorage to towers and from tower to tower. On these were placed Cyclone Chain Link catwalks with wire rope railings to provide safe footing for the workmen.

Next a wire rope tramway system was installed to carry the hauling cable for the spinning wheels. The photo shows workmen picking the individual wires from the spinning wheel to form the main suspension cable. The 436 wires in each strand of the main cable are, in reality, two continuous wires which are connected to the anchorage at both ends by means of eyebars. The end of the wire from each successive reel was spliced to the end of the wire from the next reel and the ends of the last pair of wires of the strand were spliced to the ends of the first pair. It took 19 of these strands to form each of the main cables.

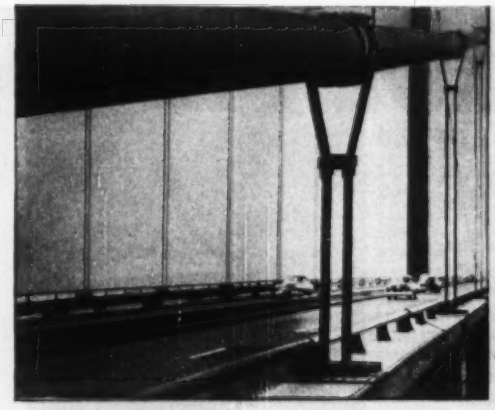
Interesting Facts

Total length of bridge—10,765 feet
Length of Main Span—2,150 feet
Length of each suspended side span—750 feet
Height of towers above piers 417 feet—about equal to height of a 35-story building
Clearance of main span above water—175 feet
Size of main wire cables—1 9/16 inches in diameter
Size of wire rope suspenders—2 inches in diameter
Total length of suspenders—56,000 feet
Estimated weight of superstructure—73,141,500 pounds
Total estimated cost of bridge—$43,900,000

by its own suspenders...

OR, HOW U·S·S TIGER BRAND WIRE ROPE HELPED TO BUILD AND SUPPORT THE WORLD'S 6th LONGEST SUSPENSION BRIDGE

IT'S QUITE A FEAT to build a two-mile long suspension bridge over deep water when the towers are as high as a 35-story skyscraper. But it's even more of a feat to use the wire rope suspenders for the original construction cable between towers, then take the same wire rope, cut it into proper lengths and use it again for the permanent vertical suspenders. It's like lifting yourself by your bootstraps. The photographs show how it was done.



54,000 FEET OF TIGER BRAND WIRE ROPE SUSPENDERS. These two-inch wire rope suspenders were made from the rope which was originally used to support the catwalks. This unique method of construction saved many thousands of dollars on the job. It was originated by the American Bridge Division of United States Steel Company and is now used in building most suspension bridges of this type.

BEAUTY IN STEEL. The Delaware Memorial Bridge represents the combined efforts of many different divisions of the United States Steel Company. The steel for spans and towers was made by the United States Steel Company, Cables and Wire Rope by American Steel & Wire Division, cement by Universal Atlas Cement Division and the bridge itself was erected by American Bridge Division.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL

QUAKER STATE

SUPERFINE LUBRICANTS

For Extra PROTECTION

● In order to withstand the constant pounding a tugboat takes in tight harbor work, rugged hemp bumpers are used for protection.

In much the same way, Stabilized Quaker State Quadrolube affords complete protection to transmission and differential systems. No detail is overlooked to make it the finest gear lubricant on the market. Special refining techniques build into Stabilized Quaker State Quadrolube a stubborn resistance to pressure, heat and cold . . . an amazing ability to withstand moisture, rust and corrosion.

It's smart business to get the extra protection of *complete* Quaker State lubrication service.

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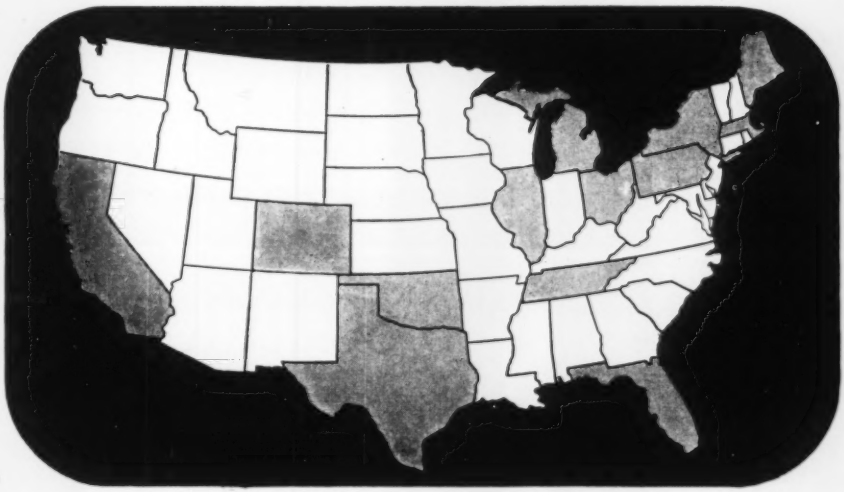
- Quaker State Super Quadrolube X-SCL
- Quaker State Viscous Lubricant
- Quaker State Wheel Bearing Lubricant
- Quaker State EXPP2 Lubricant
- Quaker State Universal Joint Lubricant
- Quaker State Waterproof Lubricant
- Quaker State Quadrolube

PRESTRESSED CONCRETE



Now accepted from Coast to Coast

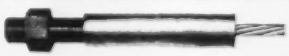
BRIDGES in Massachusetts, more bridges in Pennsylvania, a factory roof in Ohio, bridges and buildings in Tennessee, a ramp garage in California . . . these and scores of other construction jobs have been designed to use prestressed concrete. Every week more and more leading engineers investigate, then accept, this new material.

To meet the growing demand for the special tensioning members required, Roebling has developed a full line of new products. They are Prestressed Concrete Wire and Strand for pre-tensioning . . . Strand and Fittings for post-tensioning. Each has been developed to meet the special requirements of *any* prestressed concrete design.

Roebling Wire and Strand for pre-tensioning are made of high tensile acid steel that results in products of exceptionally high elastic characteristics. And they are specially treated to greatly increase their bonding quality, too.

Roebling Strands for post-tensioning are fabricated from special hot galvanized acid steel wire . . . insuring exceedingly high strength and elastic properties. At recommended stresses, there will be complete safety . . . no relaxation of the steel during the life of the structure. Our fittings develop the full strength of the strand without exceeding the yield point of any-of their parts. They are attached at a Roebling plant and proof-loaded beyond recommended stresses. This factory-assembled method brings huge labor savings on the job.

Prestressed Concrete is growing by leaps and bounds. Keep abreast of the Roebling product developments. Write Prestressed Concrete Department, John A. Roebling's Sons Co., Trenton 2, N. J.



Roebling Prestressed Concrete Strand and its specially developed fitting which are available in a complete range of sizes from 5/8" to 1 9/16". With an inexpensive hydraulic ram, assemblies such as these can be brought to stress in a matter of minutes.

ROEBLING

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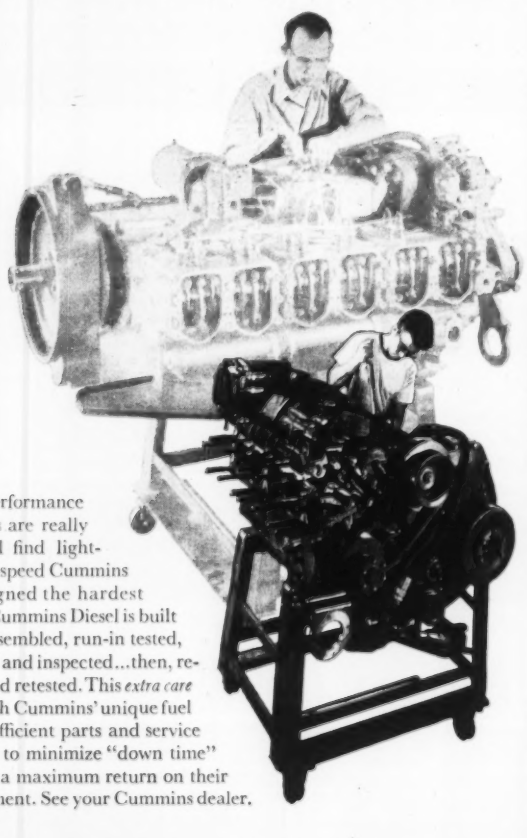

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READER COMMENT

A matter of title

Sir: In your Nov. 8 issue (p. 24) under the heading "AEC Labor Crisis Heads for Show-down," you state "One complaint at Paducah has been that this contractor's labor relations have been poorly handled—certainly there has been a high turnover in labor relations officers. The latest, Col. Clarence Barker, a retired Army colonel who handled labor relations for the Corps of Engineers and for General Electric at Hanford, is looked to for improvement." THIS IS AN ERROR.

MacKinley Ralston has been the only labor relations director for F. H. McGraw & Company on this project since it started last January. He, incidentally, has handled labor relations in an excellent manner, a fact which the Kentucky Federation of Labor will quickly attest to. Colonel Clarence Barker, whom you referred to in your story, is industrial relations director.

Contrary to your statement, F. H. McGraw & Company's labor relations at Paducah have been handled consistently according to established procedures. Research into labor difficulties will reveal that actually on a relative basis the situation has not been as bad as it might seem. The labor turn-over thus far on the job is only 20% which includes personnel terminated because their work was completed, and not replaced. Generally, F. H. McGraw & Company has had excellent relations with the fifteen AFL crafts it has contracts with at Paducah.

ROBERT F. KANE
Public Relations Director
F. H. McGraw & Company
New York

(EDITOR'S NOTE: The question involved here seems to be in part a matter of semantics. The turnover ENR mentioned was, in fact, in the job-title industrial relations director, and not labor relations director. However, the industrial relations director (in addition to other duties) also has much to do with handling of labor relations.)

Brick vs sandwich walls

Sir: We would like to call to the attention of your readers certain aspects of the article by P. M. Grennan on precast concrete sandwich walls (ENR Jan. 24, p. 34). The article compared 12-in. brick walls with "substitute panels."

We do not understand why the author chose 12-in. brick walls as a comparison. Certainly, they are not particularly well adapted to the type of construction in question. A 10-in. insulated cavity wall is obviously a much better wall for the purpose. If the author's choice was to show an unfavorable cost differential, he might have selected a 16-in. brick wall.

The article states that "in no case . . . did this (condensation) analysis warrant the need for a vapor seal." Our calculations, based on U.S. Weather Bureau data for the Marietta vicinity, indicate that condensation will permeate the insulation and decrease the thermal resistance of the section to a point where condensation is apt to appear on the interior face of the wall. If it is assumed that the interstitial condensation will drain to the bottom of the wall panel, the question arises as to what will happen to the thin concrete shell when the water freezes and exerts pressure.

We cannot agree "that there was not a sufficient volume of voids in the insulation to cause trouble by freezing of entrapped moisture." The volume of voids in the Fiberglas insulation used in the panels is 94%. The fact is that the insulation has a great void volume and that, certainly, the freezing of entrapped condensation will cause trouble.

Based on the details accompanying the original article, about 640 tons of steel were unnecessarily consumed by the panel construction used in the Marietta project. If brick and tile had been used, 430 tons of A product steel and 210 tons of B product steel could have been saved.

Mr. Grennan's article stated that the interior textured face of the wall finish furnishes "an excellent surface for painting." Regarding the painting of precast concrete wall panels, I would like to quote from an article by F. Thomas Collins in the SOUTHWEST BUILDER AND CONTRACTOR. "Painting precast concrete has been a problem. . . It has been the author's experience . . . that cement-base paints have not been generally satisfactory as commonly applied on a surface which has been recently treated with the bond-breaking agents in use for precast construction. It is stated, however, by men familiar with cement-base painting technique, that such paints can be safely . . . used on such wall surfaces, if . . . light sand-blasting (is used)."

Space will not permit a more detailed analysis of the several other points made in Mr. Grennan's article.

(*Continued on p. 14*)

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Here's really more for your money in a panel-type tower. Lightweight tubular steel quick to erect (especially in confined places) — is completely assembled with only 11 simplified component parts. Because it's built out of prefabricated panels with integral notch locking mechanism, it requires no bolts or nuts for braces and girts. Available with material platform or concrete bucket and hopper (as shown).

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7232

(Continued from p. 13)

which should be subjected to careful scrutiny by designers considering wall materials. A detailed study by the individual designer will, we are certain, show a much more favorable comparison between clay products and concrete walls than was indicated in Mr. Grennan's article.

C. T. GRIMM
Structural Clay Products Institute
Washington, D. C.

United effort

Sir: The proposed expansion of the Engineers Joint Council (ENR Feb. 21, p 27) is an excellent move to unify the engineering profession and consequently give a much needed boost to the social recognition of its members. Due to many contributing factors, being an engineer in the United States has been somewhat of a dubious honor, unlike other countries.

Do we need a good publicity agency, which in simple terms can explain the non-technical details of how the engineer's work affects the life of John Q. Public? Much of this is being done, but much more is needed. The public is always interested in knowing WHY! Just as sports and politics are discussed, so would the public discuss engineering if it were acquainted with the facts.

What is lacking? What can we do to improve our lot? These are the questions which every engineer, in every field of endeavor, should ask himself and his associates. Unification is one phase of the answer. For with the combined efforts of the 225,000 or more members of the various engineering societies we can present an organization second to none.

Taking our slogan from the greatest democratic unity in the world, let our motto be: "UNITED WE STAND."

LOUIS A. WARNER
Engineer, Westcott and Mapes
New Haven, Conn.

Wrong *L/r* used in example

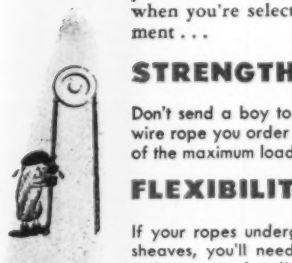
Sir: In the article, "Quick design of columns," by J. J. DelBourgo (ENR Feb. 21, p 42), the last paragraph of the example states that L/r is 38.8. The column in question is a 14-ft long 10 WF 45, however, for which the L/r is $(14 \times 12)/2.0$, or 84, for the weak, or governing axis.

For the strong axis, the L/r of 38.8 would govern only if the weak axis was supported at intervals not exceeding 6.46 ft.

W. McK. GREEN
Structural Engineer
J. E. Sirrine Co.
Greenville, S. C.

Using the RIGHT Wire Rope for the Job?

You'll get longer service life from wire rope if you do. Here are some points to keep in mind when you're selecting wire rope for any equipment . . .



STRENGTH

Don't send a boy to do a man's job. Make sure the wire rope you order has enough strength to take care of the maximum load—*plus* a necessary safety factor.

FLEXIBILITY

If your ropes undergo repeated bending over small sheaves, you'll need a flexible rope with maximum resistance to bending fatigue. Two things increase flexibility—smaller wires and preforming.

ABRASION RESISTANCE

Lang lay ropes, when properly installed, and constructions with large outer wires will help extend the service life of drag lines and other wire ropes that are subject to severe abrasive wear.

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An independent wire rope center gives outside strands the support necessary to withstand crushing and distortion—large outer wires help spread the load over a greater area.

When you're looking for ways to cut operating costs, why not enlist the help of your nearest J&L Wire Rope representative? He'll help you select the *right* balance of these wire rope properties to get the longest service life on your specific type of equipment and operating condition.

Through years of research and actual operation in the field, J&L has developed a complete line of wire rope sizes and constructions. You'll find it profitable to cash in *NOW* on J&L experience and manufacturing know-how.

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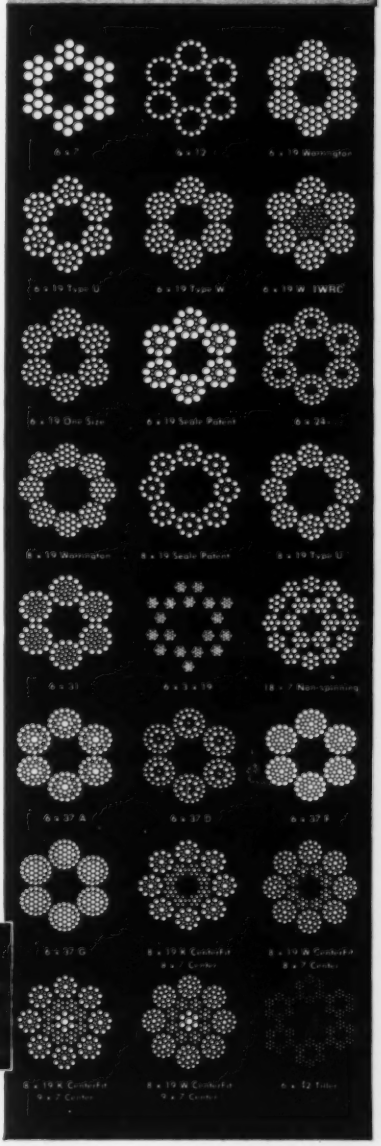

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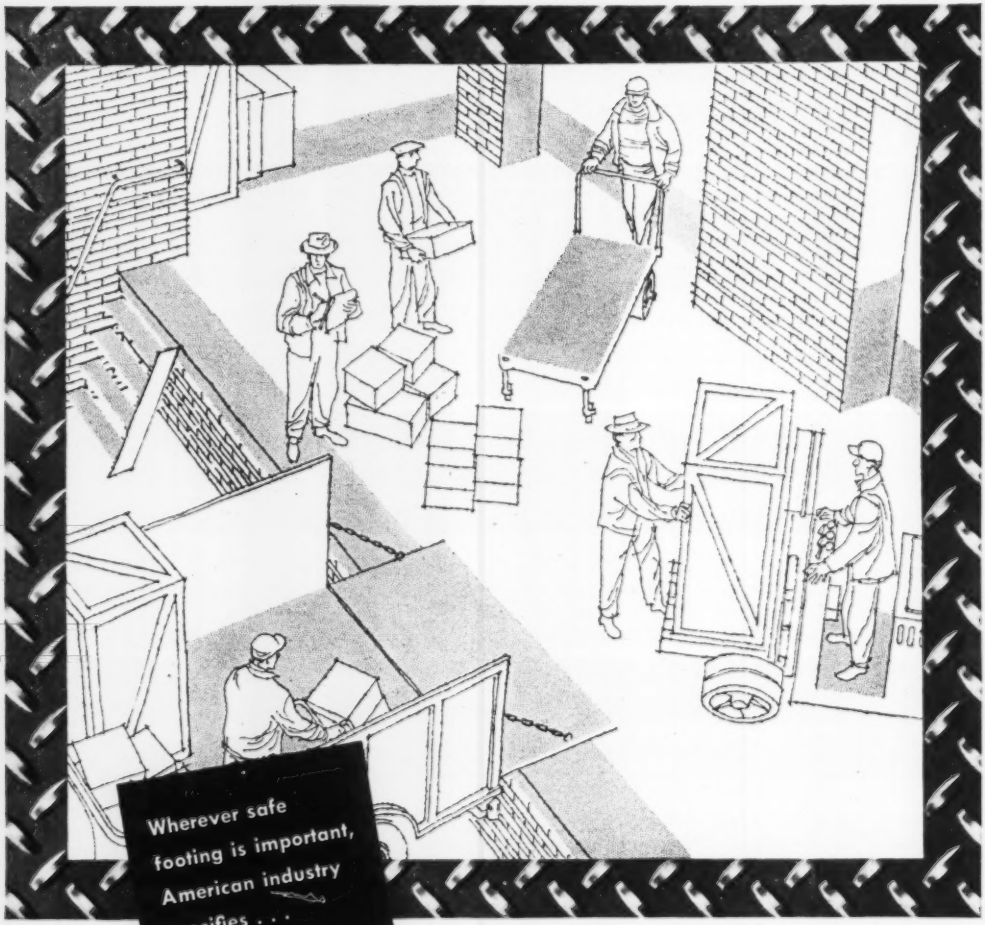

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MORE ALUMINUM FOR BUILDING MATERIALS

Builders will be seeing more and more aluminum building materials over the next few years. Aluminum companies will soon be pushing acceptance of aluminum even harder than they were before the Korean War started.

The big aluminum expansion program brought on by mobilization is behind this outlook. By the end of 1953, aluminum capacity will be 2.9-3 billion pounds a year—double what it was in June, 1950. The increase in capacity will be much greater than the military will use, short of all-out war. So there will be plenty of aluminum for civilian industry by 1953—more, in fact, than there ever was before.

This means that aluminum companies will be looking for more civilian markets. And construction is one of the big markets they are counting on to absorb their new output. They will be improving established building materials, developing new ones—and they will be out promoting sales on a big scale.

• **Old Products and New**—Windows and venetian blinds are examples of aluminum products that still get only a part of their potential market, according to the aluminum people. Windows took 100 million pounds of aluminum a year before Korea. But only 8%-16% of new windows are aluminum. Makers figure they can keep increasing this share for years. Venetian blinds used 10 million pounds in 1947, 30 million pounds in 1950. Sales should expand when the metal is freely available.

Aluminum walls will be pushed hard in the future. Makers can cite some major advantages in durability and light weight—which can lead to big savings in labor and equipment costs. Aluminum wall panels can often be lifted into place by hand, and they can be put up faster than concrete or masonry. And—because they are so light—a much lighter frame can support them.

Other advantages are claimed for the walls, too. One maker points out that aluminum wall panels can be bolted in place, rather than welded, to allow for future expansion in a factory. When the factory needs more floor space, the wall can be unbolted, moved out, and used again at a minimum cost.

Aluminum walls are already being used in commercial, industrial and public utility buildings and even some schools. Makers expect use to spread rapidly once builders are more familiar with the material. Skyscrapers, commercial buildings and schools—and other structures where appearance or lightness is especially important—are regarded as the big future markets. Aluminum companies also hope to expand use of aluminum in other present applications, such as pipes in radiant heating and roofing on farm buildings.

Aluminum producers have already come up with some new plans for "post-shortage" products. One is a house with aluminum walls. Aluminum foil insulation is another idea for development. Companies are working on other ideas.

• **The Outlook**—In the long run aluminum will have some extra advantages over a lot of the older metals like copper and iron. Its chief future advantage lies in its abundance. Cheap, high-grade deposits of the older metals are getting harder to find. So production cannot be expanded much without a rise in price. But aluminum is still abundant. What this means, price-wise, shows up in the record over the past few years. Since 1939, the aluminum price has dropped 5%—to 19 cents a pound. Prices of competing metals have gone up by as much as 250%. In the long run, aluminum will probably go up, too—but not so much as the older metals.

Aluminum is not going to drive makers of other building materials out of business. It's no miracle answer to building problems, and has limitations just as other products do. But it is a material with a bright future, still in the relatively early stages of development. And mobilization, by greatly increasing the supply available, has given it a big boost toward becoming a major industrial and building material. According to one estimate, builders may be using as much as 1.2 billion pounds of aluminum by 1960.

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You're running a railroad through Eastern Oregon. Sand keeps drifting onto your tracks, shifting down embankments and cut sections. Fuel oil, tank cleaning residue, and other cheap residuums fail to hold the sand for long. Maintenance costs for sand control are prohibitive.

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Rate of application varies from an economical .3 to .6 gallons per square yard of the 1:1 dilution. Penetration into the dry loose sand is from ½ inch to ¾ inch.

Wheat grass is sown on some areas before the Bitumuls is applied. Grass shoots are held in place, giving double protection to the railroad right-of-way.

Bitumuls, versatile enough to hold shifting sands or to bind pavements to withstand the pounding of heaviest highway carriers, is made in many grades. Mixing Grades of Bitumuls are ideal for treating virtually all available aggregates. Quick-Setting Grades of Bitumuls are favored the world over for armorcoat and macadam work. High Viscosity Bitumuls is standard for surface-treating.

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EDITORIALS

Confusion coming up

THE WAGE STABILIZATION BOARD'S announcement of a policy for the construction industry that will permit maximum wage raises of 22½ cents (including 7½ cents for welfare benefits) will have at least two certain results:

The first is that it will raise costs of construction: If the full 15-cent raise came about on top of present wages, the effect would be to lift ENR's Construction Cost Index by 5.45%. If the full 22½ cents were granted, it would raise that index 8.17%. Similar raises would bring ENR's Building Cost Index up 2.45% or 3.78% respectively.

These, however, are maximum figures which won't be achieved anywhere, if we read WSB's statement aright. And that brings up the second sure result: Confusion and bickering.

WSB says that fringe benefits—except health and welfare—will be charged against the 15-cent pay raise authorized. Thus it is figured that the average actual wage increase across the board in the industry will amount to about 3 cents. But that will vary all over the lot, by trade and by location. Conceivably, some areas and some trades will get no raises at all—depending on what has been granted by employers in the way of overtime, paid holidays, vacations, sick leaves and the like. Other areas and other trades may get substantial raises.

And the fact that one union in an area may thus get quite a lot of extra money, and another in the same area little or nothing is going to put a lot of pressure on union leadership to seek more.

If you accept the principle of government control of such matters, there isn't too much alternative. In fact, WSB has made a valiant attempt to put forth regulations for a traditionally divided and independent industry.

If you don't accept that principle, then the answer is simple. Economic conditions will exert more effective control on wages—with a lot less confusion.

Plastics for construction

THERE NOW CAN BE NO DOUBT that plastics and other synthetic materials will play a growing role in the construction business. The protective lining of an outfall sewer cited in this issue (p.74) is an outstanding example of imaginative use of these relatively new materials to solve a longstanding, vexing construction problem.

But this is only one of many uses to which plastics have already been put. And new applications are appearing continuously. At the recent National Plastics Industry Show in Philadelphia, there were upwards of a hundred products designed for one type or another of building or contruction use—pipe, wall siding, pump impellers, even structural bars and railroad tie plates.

The implications of this new development on the construction business are considerable. Plastics is not a single material, but like alloy steel a whole list of materials. Engineers wishing to use plastics must not only be familiar with what is available but must be able to write clear specifications that cover their requirements. Manufacturers, through research, must not only be certain of the qualities of each of their products, but as definite in stating their limitations as their advantages.

These conditions are in the process of development. It marks a new step in the growth of plastics which have heretofore found their greatest use in gadgets and household items. Plastics for construction have a bright future.

Sense in conservation

FARM AND COMMERCIAL organizations have come to the help of the river regulating districts in New York State in their fight to retain their right to use part of the state's vast Adirondack Forest Preserve as sites for storage reservoirs. Under existing law, 3% of the 2,178,000 acres in the preserve can be used for that purpose. A proposed amendment to the state constitution would cut that amount to zero.

This controversy in New York started about two years ago when the Black River Regulating District announced plans for a reservoir that would flood 934 acres of the forest preserve. Ostensibly, the opposition was sparked by the Isaac Walton League and like recreational groups, but it is now quite widely believed that the real backer of the drive was the Adirondack League Club, which would have some of its large holdings flooded by the proposed reservoir. Engineers of the regulating districts hold that public use of the forest preserve would be fostered by reservoirs, which are needed to provide more headwater storage for the rivers rising in the Adirondack Mountains.

Similar opposition to the construction of Echo Park Dam near the headwaters of the Colorado River developed about a year ago (ENR March 8, 1951, p.112). There it was held that the reservoir would ruin the Dinosaur National Monument. Actually, according to the engineers who proposed the dam, the lake would make the scenic and notable geologic areas of the region more accessible to the public.

Unreasoned or selfish opposition can hamstring many a worthwhile project. However, persistence on the part of the engineers and other advocates of a project generally will bring sense into public thinking about an undertaking. That appears to be the case in New York State. What once looked like a losing fight may yet be won.

SHAKE OFF "Price Tag Hypnotism" ON SUBDRAINAGE

Low initial material cost is not the secret of profit on subdrainage installations. It's the *installed cost* that pays off.

You gain considerable savings with Armco Perforated Pipe because jobs are completed faster, yet require less labor. These savings in time and money more than wipe out the initial advantage of "cheap" subdrainage material. In addition, you get a sturdy system that's in no danger of crushing, cracking or disjointing under heavy loads.

Installation of Armco Perforated Pipe is both easy and economical. The hauling and handling part of the job is simplified by long, lightweight 20-foot sections. Fewer joints are needed and these are quickly made with sturdy bolted couplings. Also, the whole job can be done by any small unskilled crew without special tools.

Next time you have a subdrainage job, figure it with Armco Perforated Pipe. It will prove to be your most economical choice for draining highways and streets, railways, airports, athletic fields or other places where excess underground water is a problem. Write for information. Armco Drainage & Metal Products, Inc., 1492 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

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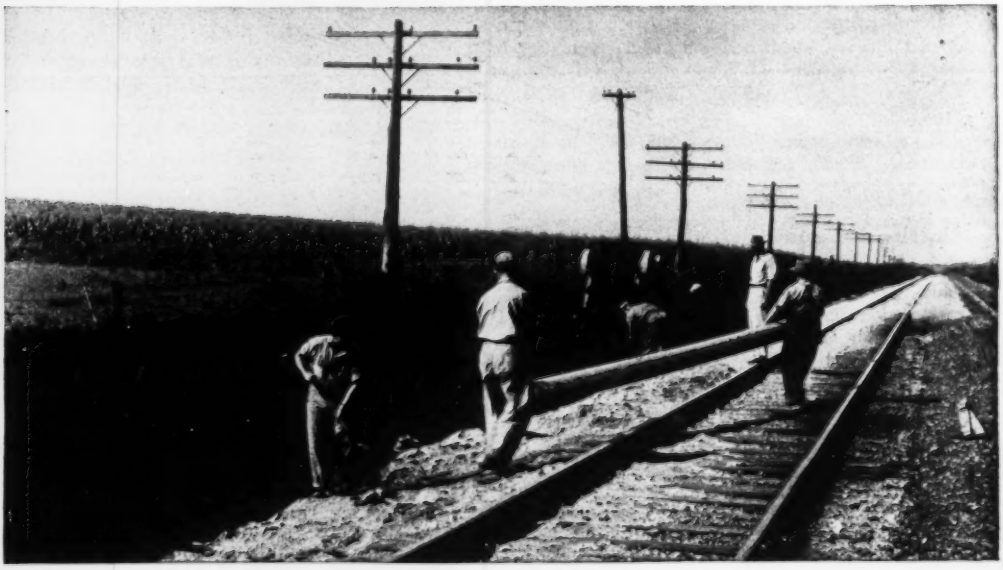
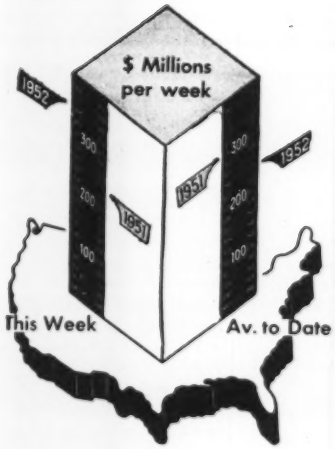


ALTERNATE BIDS STILL ALIVE—Despite opposition to the Army Engineers practice of receiving bids of alternate designs for certain types of work, you can expect the practice to be continued. Dislike has been expressed by both the AGC and the ASCE, but this is not apt to have any immediate effect.

SUSPENSE—Attorneys of the Department of Justice Anti-Trust Division are busy issuing subpoenas to certain building trades organizations and contractors in Chicago to produce their records of the past five years. Next step will be for the Anti-Trust Division to study the records for evidence of monopoly control over construction charges—particularly in plastering and lathing practices (ENR Mar. 27 p. 27). If evidence warrants, officials of the organizations in question will be subpoenaed to appear before the Grand Jury. Inside observers report the investigation may reach this point by April 15.

CONTINUING THE FIGHT—General specialty contractors, long at odds on matters of labor relations, have now taken their disagreement into a dispute over a Senate bill to prevent "bid shipping" in government contracts. The measure—S. 2907—supported by electrical, plumbing, and heating groups would prevent a general contractor from undertaking mechanical specialty work in which he has no previous experience; provides that any benefit obtained by getting lower bids from specialties shall return to the government in the form of a lower contract rate.

COMPLAINTS EXAMINED—Complaints against about 150 building contractors and construction firms in Cleveland, Dayton, Ohio, and Paducah, Ky., have been filed—charging overpayment of wages to bricklayers and roofers. The Cleveland office of the Wage Stabilization Board has forwarded the complaints to the Construction Industry Stabilization Commission in Washington where they will be sifted and returned with recommendations. The complaints allege payments over the $3 rate for bricklayers and above the $2.70 rate for roofers. Alec A. Masters, chief enforcement officer of the regional WSB, says the move is only the start of actions that will result from an investigation underway for over a year.



Contracts by type of work

	This Week	Cumulative 11 wks 1952	1951	% chge
Waterworks	$8.3	$73.7	$66.2	+11
Sewerage	3.1	52.8	87.4	−40
Bridges	10.4	87.9	77.7	+13
Highways	34.7	301.6	257.8	+17
Earthwork, waterways	22.4	121.5	87.0	+40
Buildings:				
Public	29.2	415.9	661.4	−37
Housg., pub.	35.0	271.5	170.8	+59
Housg., priv	48.9	738.9	531.6	+39
Commercial	17.0	138.5	191.9	−28
Industrial	117.2	815.3	1,591.8	−49
Unclassified	19.5	356.1	457.5	−22
Total	**$345.7**	**$3,373.7**	**$4,181.1**	**−19**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

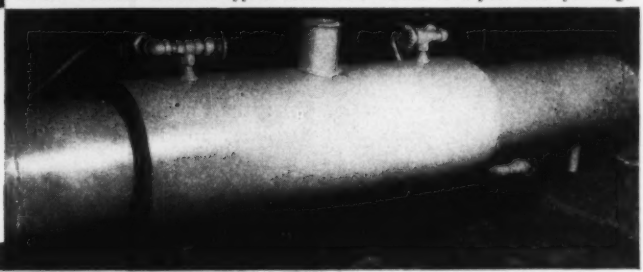
Index Base = 100		1913	1926	1949
Constr. Cost.	Apr. '52	554.12	266.36	116.16
Bldg. Cost	Apr. '52	407.81	220.45	115.42
Volume	Mar. '52	509	207	147

IN THIS ISSUE . . . Atlas constructors blast Moroccan air base probe (p. 23) . . . House increases federal aid to highway, cuts civil works (p. 26) . . . Demountable housing gets new test (p. 28) . . . Jack drop causes waffle block crash (p. 29) . . . Renegotiation rules revised (p. 31) . . . Highways, schools and pipelines get more steel (p. 32) . . . Wood vs. steel costs analyzed for school (p. 35) . . . Housing bond offering tests market (p. 39) . . . Construction labor looks for bigger checks (p. 43) . . . Baltimore to spend $214 billion on highway program (p. 47) . . . Canada in midst of construction boom (p. 57) . . . The President moves into a "new" house (p. 64) . . . Skyscraper sheathed in aluminum (p. 67) . . . Plastic lining protects sewer (p. 74) . . . Cyanide in water supply may simulate polio symptoms (p. 76) . . . All welded girder built for highway overpass (p. 78) . . . Engineers rewarded for survey method (p. 84) . . . 60,000 prefab homes to be built this year (p. 88) . . . Pacific northwest leads in dam-building activity (p. 144).

before

BEFORE — conduit shown in typical condition 6 months to a year after *painting.*

after



AFTER — conduit shown after being metallized with zinc and coated according to Metco System No. 103 by Metalweld, Inc., metallizing contractors, Philadelphia, Pa.

old paint job lasted 6 months —metallizing treatment lasts indefinitely

The Philadelphia Electric Co. has had considerable maintenance on these underground conduits which are practically immersed in water for a large part of each year. The average paint job would last from 6 months to one year before it flaked off. In the meantime rusting had been going on under the paint coating during this period.

The first of these conduits was metallized with zinc over two years ago – the zinc then being covered with a vinyl after-coat in accordance with Metco System No. 103. Careful periodic inspections have revealed *no apparent changes* in the coating over this period. Even when the vinyl after-coat fails, which may conceivably occur after 5 years or so—the zinc coating is still there providing complete protection against corrosion and it will only be necessary to replace the vinyl after this extended time. Even this will be very inexpensive compared to the replacement of the previous paint jobs, since there will be no rust or paint flake requiring removal by wire-brushing or sandblasting, a comparatively expensive procedure.

Metallize 'Em—And You Can Almost Forget 'Em. The following organizations are set up to provide positive corrosion protection at lower annual cost in accordance with Metco* System specifications. For further information, or copy of descriptive bulletin, contact the one nearest you.

*Reg. U. S. Pat. Off.—Property of Metallizing Engineering Co., Inc.

THE METCO SYSTEMS...

are a series of 18 basic engineering specifications developed by Metallizing Engineering Co., Inc. Developed over 19 years of experience with pure zinc and aluminum coatings on many different types of structures and equipment, the Metco Systems provide the answer to standardization of surface preparation, metal coating thicknesses and organic after-coatings for various service conditions and appearance requirements.

Metco System contractors

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Lincoln Pk. 25 (Detroit), Mich. **DIX ENGINEERING CO., INC.** 1417 Dix Road Tel. Dunkirk 1-8822	**Philadelphia 29, Pa.** **METALWELD, INC.** Fox & Hunting Park Ave. Tel. Radcliff 5-3471	**St. Louis, Missouri** **NOOTER CORPORATION** 1420 South Second Street Tel. Main 6000	**Brooklyn, N. Y.** **ARTHUR TICKLE ENGINEERING WORKS, INC.** 21 Delevan Street Tel. Main 5-4200	**Houston, Texas** **F. W. GARTNER CO.** 3805 Lamar Avenue Tel. Atwood 5338

Atlas Constructors blast Moroccan air base probe

Angered by a three-month barrage of statements, testimony and innuendo as congressional committees probe into construction of air bases in French Morocco, the five-contractor combine building the bases struck back last week with charges that the record is "stacked."

The combine, known as Atlas Constructors, is composed of five major U.S. construction firms: Morrison-Knudsen Co., Inc.; Bates & Rogers Construction Corp., Ralph E. Mills Co., Inc., Blythe Bros. Co., and Nello L. Teer Co. Acting through J. B. Bonny, chairman of its operating committee (and vice-president and general manager of MK), the contractors, so far denied a hearing, moved on three fronts to get their side of the story told:

1. In an open letter to the congressional committee they said flatly: "Atlas Constructors . . . have not wasted tax dollars; Atlas Constructors have not been inefficient. . . . The contrary is true."

2. They demanded that the letter be included in the official records of the hearings, and that they be permitted to testify.

3. They were preparing a more detailed answer to the Army Engineers, who in turn had demanded that the contractors file with them a full report on their activities.

• **Gets results**—The contractors pulled no punches in their letter—which was addressed to Porter Hardy, Jr., chairman of a House committee which carried on part of the investigation. "As matters now stand," said Bonny, "your committee's records are stacked with allegations of waste and inefficiency by Atlas Constructors, unbalanced by simple facts. Your committee has a one-sided story."

The letter got results. As of last week, the Senate's Preparedness Investigating Subcommittee (which also is investigating the bases and received a copy of the letter to Hardy) told Atlas it had made their letter a part of its official record.

The contractors followed up fast. They pointed out that in more than three months, only one Atlas man (Richard C. Wall, personnel officer) had been called to testify.

"The public has been given the impression that it is not getting its dollar's worth of defense per dollar of tax money. This . . reflects on all who have tackled defense work under the lash of urgency, as we tackled it," Bonny's letter said.

"Loose testimony breeds loose talk, undermines confidence. Your committee received this unbalanced testimony in executive session. Thereafter, it released these unsubstantiated allegations to press and radio. . . . You yourself might wish to balance . . . the testimony . . . by releasing our side of the story from your office. . . . Otherwise, of course, we will proceed on our own."

• **Long story**—The contractors' lengthy letter was an outgrowth of a double-barrelled investigation (by House and Senate committees) which started in January with the announced purpose of checking "employment practices and costs in connection with overseas construction."

It was obvious at the first hearing by the Senate half of the investigation (ENR Jan. 17, p. 26) that the probers weren't much interested in employment practices as such, but were much more concerned with overall conduct of the projects.

Later hearings by both House and Senate groups (ENR March 27, p. 26) bore out this impression—getting far afield into charges of poor planning, of runways that broke up, of work done in the homes of supervisors by craftsmen paid by the government, of the use of "cost plus" contracts.—(**Said Bonny: "At the outset . . . may we state for the record that our contract . . . is on the basis of a fixed fee, plus costs. . . . The impression is widespread that such a contract invites imprudence, waste, and 'sky the limit' spending. . . . It should be made crystal-clear to the public that a contractor on a cost-plus basis doesn't get a single nickel over and above his fee, no matter what his costs may be. The contractor must justify every item of expense to the appropriate government authority.**")

To date, only Wall has been called to testify for the contractors. Almost all other testimony has come from workmen and supervisors who were at one time employed on the work, and who left it for varying reasons. (One witness, however, was James Wise, a civilian engineer for the Air Force who testified that original rough estimates put the cost of the Moroccan work at $300 million—a figure later upped to $455 million, because of "rising construction costs and additional classified work.")

(*Continued on p. 24*)

Air base probe . . .

(*Continued from p. 23*)

• **Drumfire of charges**—The investigations (since abandoned by the House group in favor of the Senate committee) have produced a steady drumfire of charges and countercharges, sensational headlines, and statements from committee members.

Sen. Lyndon Johnson, chairman of the Senate group, in fact, characterized the construction work as a "sordid mess," and demanded it be shut down and cleaned out.

The contractors have not been alone in their role as targets. The Corps of Engineers has been roundly criticized for poor planning and administration; the Air Force has also been raked over for lack of planning, and for its demands for changes and speed; the State Department—which signed an agreement with the French government that forces contractors to do their procurement through a French commission—also has come in for its share of censure.

Among the many questions that have not been publicly answered is why plans for rehabilitating four old air bases were suddenly changed to construction of five new ones—and why only two of these are now under way.

But it was to the specific charges of their own conduct that the contractors replied in detail. In digest, Bonny's letter said:

I. Atlas states case

1. At this moment, the job cost per square yard on our North African assignments is less than the original estimate of cost made by the Air Force approximately a year and one half ago.

2. We earnestly believe that our record of performance on these assignments is unparalleled in the entire history of construction work.

As your committee knows, the major accent of this defense project has been on speed, on urgency. In a word, Mr. Chairman, we agreed to hustle—and hustle we have. Your committee undoubtedly knows that you can build air bases fast or you can build them cheaply. But not both.

• **The beginning**—May we go back to January 3, 1951—the date we were handed our letter contract?

On that date, the components of what was to become Atlas Constructors were told to organize men and equipment so that both would be available in North Africa to begin operations by no later than March 15.

We were supposed to reconstruct

J. B. BONNY, operating chairman, Atlas Constructors.

four existing bases and construct one new base. We were supposed to have first-stage work far enough along so that planes could be flown from these sites by July 1.

So we began to recruit men and assemble equipment. The first shipload of equipment left New York on February 13, 1951, and arrived at Casablanca on February 23.

Meanwhile, a hitch developed, far outside the realm of a contractor's dominion. An impasse arose in the negotiation of a working agreement between our government and the government of France. We could send equipment, and we did, but not the necessary manpower to receive it at Casablanca and get on with the job.

We had a shipload of equipment at Casablanca by February 23, but only 26 men had been cleared for transport to North Africa. By April 14, over three months after notice to proceed, only 130 men had been cleared.

Thirty-odd million dollars worth of equipment and material was sitting on the docks at Casablanca or waiting to be unloaded, and we had a corporal's guard, so to speak, to . . . handle it.

• **False starts**—On April 22, 1951, obedient to instructions, we began operations at Nouasseur and on May 11 at Sidi Slimane. Except for two false starts on Ben Guerir and Mechra-bel-Ksiri in April and May respectively, we were not given clearance to get going any other place until December 7, 1951, when Ben Guerir was "released," so to speak.

II. Instructions changed

We are not building the air bases we were to have built. Nor are we building them where they were to have been built.

Originally, we were supposed to enlarge and reconstruct bases at Rabat-Sale, Meknes, Marrakech and Khouribga. And we were shown an alternate for Marrakech, north of Marrakech, toward Ben Guerir. The only new base was to be at Nouasseur.

That was the outline as of January, 1951. By April, 1951, signals had shifted. We were told to build entirely new bases at Nouasseur, Sidi Slimane, Mechra-bel-Ksiri, Ben Guerir and Louis Gentil. And, as you know, Mr. Chairman, we are now building Nouasseur, Sidi Slimane and Ben Guerir, and we are awaiting authority to proceed with Boulhaut and El Djema Salhim (Safi).

Without going into all the ramifications of technical difficulties, Mr. Chairman, let us merely point out that when you plan to rework existing bases and suddenly discover you must work in virgin territory, there is considerable rejuggling involved.

Despite these changes and attendant difficulties, Atlas Constructors—between April 22 and July 14 (Bastille Day) at Nouasseur—and between May 11 and July 14 at Sidi Slimane:

• We moved almost 5,000,000 yards of excavation.

• We handled approximately 1,000,000 tons of base rock.

• We placed 900,000 square yards of asphaltic pavement.

In short, Mr. Chairman, Atlas Constructors provided effective operating bases from which large bombers could be and were flown on July 14—in less than three months of construction. Atlas Constructors had a deadline to meet—and we met it.

III. Full speed ahead

We were, as you know, directed to operate under a "crash program." "Crash program" operations, Mr. Chairman, take many turns.

For example, we were directed on June 18 to have troop housing available for 950 men by August 1. And on August 11, we were further directed to have troop housing available for an additional 2,400 men by August 24.

In effect, Mr. Chairman, we undertook to house a small army in a matter of weeks and days. We had to obtain materials where they were immediately available—and that meant right there in North Africa.

Another factor entered in. The United States and France had agreed that, on an equal basis, Atlas requirements are to be purchased preferably in Morocco. Under these terms, purchase of items in an unrestricted market is impossible.

Atlas is required to have prior approval of the French Mission for all

purchases in excess of 1,000,000 francs, or about $3,000, before Atlas goes shopping in Morocco. Such approval, in effect, becomes a signboard. French or Moroccan firms are in the not-unhappy situation of knowing in advance when our buyers are coming and what they will be asking for.

Mr. Chairman, may we point out, without reflection of any kind, that it would be less than human nature to resist the urge to "see us coming," as the saying goes?

We are positive that were we able to shop without restriction, we could have procured, and could procure now, a considerable amount of material at lower prices than circumstances permitted.

• **Other facts**—May we point out two other facts in this connection?

First, in all cases where competitive bids are not employed in buying, we act only on specific directives from the government contracting office; and, of course, his directives are keyed to the strategic necessity for speed and the urgency of performance.

Second, we would like to suggest that even in cases where competitive bids are called and items allocated to the low bidder, the effectiveness of the bidding process is reduced.

IV. No faulty runways

Atlas Constructors have frankly been shocked at allegations—quoted in the press—that runways we constructed in North Africa were failures because of faulty craftsmanship, substandard techniques and disobedience to specifications.

The simple blunt truth is this:

There has been no failure of any runway constructed by Atlas Constructors.

We know the background of this allegation. It is a shabby one. A partially paved operations apron at Nouasseur was penetrated by a 200-ton compacting roller. Atlas was ordered to place that roller on the apron as a test. We protested that the sub-base material was unstable. We pointed out that it was in a saturated condition, due to an early fall rainstorm of unusual intensity prior to completion of drainage structures.

The apron, in short, was not ready for so tough a test. We submit, Mr. Chairman, that this incident is hardly a substantial foundation for charges of inefficiency and bad workmanship.

• **Stop order**—Mr. Chairman, the ramifications of crash-program procedure are virtually unbelievable.

Witness, if you will once again, Mr. Chairman, that Atlas was ordered in April, 1951, to construct an air base at Ben Guerir. It was not one of those originally planned, but a new base, south of Casablanca. We began operations in April. We were ordered to stop on May 11.

On the following day, May 12, Atlas was instructed to begin work at once at Mechra-bel-Ksiri, which is not exactly next door to Ben Guerir. It is some 200 miles to the north. So we moved our facilities, hither to yon. But on June 20, 1951, we were ordered to stop work at Mechra-bel-Ksiri. On September 11, we began to dismantle the Mechra-bel-Ksiri camp, for we were instructed to retrace our steps to Ben Guerir.

None of these was our decision. It was not—it is not—in our power to act except under orders. We must be obedient to directives, and, we may well assume, those directives are based on altered circumstances at high levels—most certainly not on whim or caprice.

• **Money lag**—Your committee is undoubtedly also aware that the flow of funds for our operation has lacked continuity.

Three times since our work was started, procurement, recruitment—and—to a minor extent—construction—have been brought up short for lack of funds.

For instance, personnel has been recruited, and then the men had to be sent home because funds were not available to ship them overseas. Purchase orders have been placed, then cancelled and reinstated so often, due to lack of funds and to the uncertain flow of funds, that many a legitimate vendor has doubted the wisdom of continuing to deal with us.

V. Performance cited

Mr. Chairman, the press reports—based on testimony your committee received in executive session—set forth that the estimated cost of the North African air base job was approximately $300 million. And the direful word has been in print that the total final cost will run between $400 million and $500 million.

Thus coldly stated, the inference is that we—the contractors—botched the job at the expense of the taxpayers. We submit, Mr. Chairman, that the record is clear:

1. More facilities are to be constructed than were originally contemplated. Again—this was not our decision. It is orders.

2. These facilities will have been constructed in different locations than originally contemplated with attendant increases in quantities.

May we also re-emphasize, with all the earnestness at our command, that we are proud of the work performed, both as to quality and as to quantity.

ATLAS CONSTRUCTORS
J. B. Bonny, Chairman
Operating Committee

Atlas answer

Atlas Constructors will this week present to the Secretary of the Army a complete, fully documented answer to all questions and allegations concerning the contractor's operations in building the Moroccan air bases. The Department of the Army is expected to make the answer public. If not, Atlas Constructors will release it.

Chairman Johnson of the subcommittee has now promised to give the contractors an opportunity to answer all charges. They may have their inning next week.

VI. Correction made

Altas Constructors last week got the Army to correct a false impression that resulted from when Col. Harry E. Reed, chief of Army Audit, first told the subcommittee that his agency was still withholding approval of $17 million of vouchers on hand last September when the definitive contract for the work was signed. He later reduced the figure to $13 million. Sen. Johnson showed by his questioning that he understood Col. Reed to mean that government payment to the contractors on these vouchers had been held up.

Atlas Constructors took prompt action to correct the misunderstanding. In a letter to Army Secretary Frank Pace, Jr., they pointed out that the erroneous interpretation "is not only most damaging to the reputation and credit of Atlas Constructors, but dangerously impugns the credit of all of the member contractors."

Further, the letter stated that "the inevitable effect of such allegations will make it almost impossible for any contractor to secure credit from financial institutions with which to carry on and perform fixed-fee government contracts." J. B. Bonny signed the letter.

In three days, the contractors had an answer from Lt. Gen. Raymond S. McLain, Army comptroller, setting the record straight. The total amount of $17 million was paid to Atlas Constructors provisionally under letter contract, but subject to final audit, be explained. Of that sum, $4 million has been finally audited and approved. Final audit of the remaining $13 million has not been completed, General McLain said.

House boosts highway aid money, cuts civil works in rush to clear bills

The House of Representatives was definitely of two minds on economy last week as subcommittees reported out money bills for highways—which they boosted, and the Corps of Engineers' civil functions—which they cut.

The committees were sharply critical in both actions. In the case of federal-aid appropriations for highways, they criticized the President's lower budget request as "unrealistic"; in the matter of civil functions, they castigated the engineers for inability to furnish firm obligation and expenditure data.

The two committee reports were high points of the week's activities in Congress, which included action on extension of the Defense Production Act, hearings on a parkway along the Mississippi river, and other pertinent matters.

QUESTIONS FLEW thick and fast as Oscar Chapman discussed Hells Canyon Dam.

I. Road funds upped

Funds for a two-year extension of federal aid for highways came out of a House Public Works Subcommittee untouched by the current economy drive in Congress. The subcommittee approved $550 million for both fiscal 1954 and 1955.

This is $50 million above the amounts voted for fiscal 1952 and 1953 and $150 million more than the Administration had asked. The full Public Works Committee is expected to approve the subcommittee action some time this week.

The measure will provide for $247.5 million for primary highways, $165 million for secondary roads, and $137.5 million for urban areas. The subcommittee believed the Administration request was "un-realistic" and pointed out that the $50 million boost was to cover a 10% increase in road-building costs.

Some of the opponents had charged that the $400 million sought by President Truman did not represent a full return to the highways of taxes which had been collected by the federal government.

In addition to the $550 million, the bill provided the following amounts of federal aid: $22 million each year for forest highways; $19.2 million each year for forest-development roads; $12 million for fiscal 1953 for access roads; $10 million for fiscal 1954 and 1955 for national park roads; $10 million for each year for Indian reservation roads; to furnish the committee with firm obligation and expenditure information.

The committee approved $492.4 million for civil functions, a reduction of $200 million below the President's request. The recommended amount was $105,459,000 below current fiscal year appropriations. The biggest single cut was $90,976,000 for rivers and harbors construction, followed by a slash of $81,300,000 in flood control construction.

The committee called attention to the fact that the Corps already has under construction 400 projects which will cost about $5.9 million. Additional projects costing around $8 million have been authorized, but no work has started on them. The committee called for a better coordination of the construction program.

Meanwhile, Maj. Gen. Lewis A. Pick, Chief of the Corps of Engineers, appeared before the House Public Works Subcommittee and recommended that Congress consider "de-authorizing" several hundred approved projects on which no work has been started.

He also pointed out that some projects still were being carried on the books that were authorized as long ago as 1913, but which actually have been written off as far as the Engineers are concerned.

The Corps of Engineers now has over 3,000 projects authorized by Congress for navigation, flood control, and mutiple- purposes.

Of this project list, some 900 have never been started, but to get them off the books it would be necessary for Congress to "de-authorize" them.

Pick promised to provide the committee with a list of active and non-active projects.

From this compilation, the committee will tackle the ticklish job of cutting off the projects that can be disposed of. Strategy is to reduce criticism of the Corps' "pork barrel" operation—both public criticism and that stemming from such congressional quarters as the Appropriations Committee.

II. Parkway hearings held

The House Public Works Subcommittee continued hearings on 31 bills that would collectively authorize construction of a Mississippi river parkway that would run from above Minneapolis to the mouth of the stream below New Orleans.

The identical measures—introduced by congressmen living in the ten states that would be affected—would authorize the U. S. commissioner of public roads to enter into agreements with the states to provide for integrating the parkway with existing roads.

Public roads officials—who would supervise construction—testified that the project would cost between $770 and $1,450 million, depending on whether a single road is built, or roads are built on both sides of the river to provide a dual highway.

• **Okay Baltimore-Washington road**—On the subject of highways, the House also tucked away approval of $6.7 million in the Interior Department budget for further work to be undertaken on the Baltimore-Washington parkway.

On this same matter, a subcommittee of the House Public Works Committee recommended hiking the contract authorization from $13 million to $14.5 million—a move the full committee is expected to approve this week.

III. Cut non-military work

The House also continued cutting non-military construction funds. Cuts so far average between 10 and 20%. It chopped $15 million from a $135-million request for school construction grants and $20 million from $135 million requested for hospital construction.

Only token cuts were made in the Interior appropriations, which had been slashed $133,567,000 by the Appropriations Committee following a policy of "no new starts" for non-military construction.

The bill, under consideration, as approved last week by the House, provided $487,275,648 for Interior, a cut

(*Continued on next page*)

of $5 million below the Appropriations Committee amount. No construction was involved in the House cuts.

But the Hells Canyon Project was in trouble within a few minutes after Interior Secretary Oscar Chapman began testifying in favor of it before a House Interior Subcommittee last week. Shortly after Chapman began testifying on the $350-million hydro project on the Snake River in Idaho (ENR March 27, p. 28), subcommittee members began bombarding him with questions indicating their opposition. As a result of this opposition and the general attitude of the House on cutting back non-military construction there appears to be no chance of getting the measure to the House floor this session.

The Senate Banking and Currency Committee was expected to complete action this week on extension of the Defense Production Act, extending controls on a one-year basis with little change from existing law.

The committee beat down Republican moves to end wage and price controls and at the same time served notice that it won't go along with Administration request for tightening controls.

IV. Controls extension

The committee appears willing to leave decontrol of construction materials to Defense Production Administrator Manly Fleischmann, who has indicated that decontrol will take place on an item-by-item basis as materials move into surplus supply situations. The committee has approved a one-year extension of rent controls and tacked on an amendment requiring the Office of Rent Stabilization to give 30 days' notice of public hearings before reestablishing controls in any city.

Bureau of Public Roads suffered a cutback of $93 million in funds when the House approved a total of $359 million for its fiscal 1953 operations in approving the Commerce Dept. budget.

The bulk of the cut fell on federal aid for highways' $75 million. Reduction was made on premise that shortages of manpower, equipment and materials would slow completion of much of the road work. If the shortages don't occur and the work is completed, the government is obliged to provide funds since the Bureau already had been given authority to obligate aid money. This would be provided through a supplemental appropriation. The other Bureau cuts involved a reduction of $3 million in the $21 million asked for forest highways.

Army adopts new fee system

District offices of the Army Engineers are shifting this week to a curve method of determining architect-engineer fees—the new procedure of plans and specifications for construction of public works. It replaces the detailed analysis method that has been used for the last two and a half years.

A letter instituting the change will reach the district and division offices before the week is out. In it, Maj. Gen. Lewis A. Pick, chief of engineers, informs the field contracting officers that the Department of the Army has given permission for use of the curve method. Further, his letter instructs them to adopt the method for the purposes specified.

Curves to put the new procedure into into operation were being reproduced last weekend. They will be delivered to the field offices this week or next.

These curves will show A-E fees for various types of construction work, in relation to project construction costs. Thus, for a project of a single type covered by one of the curves, the district engineer theoretically could take off the permissible figure for the A-E contract directly above the estimated construction cost of the job.

But construction projects and A-E contracts are never that simple. Actually, the field offices will have to use as much judgment and care in computing A-E ceilings by the curve method as they did by detailed analysis.

• **Many curves**—Six or seven curves, it is understood, will be distributed to the field offices. That number can cover only the major types of construction work performed by the Army Engineers. A detailed breakdown might show a hundred types in all, with a score or more on any one project. And the A-E services required may vary from routine planning to exhaustive analytical design. Computing the A-E contract figure will be no easy chore for the district engineer and his staff.

Changing to the curve method won't affect Army Engineer policy in negotiation and awarding A-E contracts. Professional people have been severely critical of the system followed by the Corps of Engineers in taking bids on A-E lump-sum contracts for Army and Air Force projects. As the professional societies of architects and engineers point out, the procedure amounts in effect to bidding against a ceiling price.

Field offices will continue to compute maximum prices that, in their judgment, conform to Army regulations and federal law. Up to now, the field staffs have figured these upset prices by the detailed analysis method, using a mass of tabulated data collected by the Corps of Engineers during the last twenty years on A-E costs for various types of work. As a check, they could compare their computations against curves of A-E average costs for different kinds of construction.

Computed maximums are never disclosed. With the ceiling price for an A-E contract established, an architect-engineer from the top of the qualified list in the office is invited to submit a proposal. If his prices is too high, even after thorough discussion of the project, the No. 2 firm is asked to bid. So far, according to report, the Army Engineers have never had to seek farther than the second bidder.

• **Objections outlined**—Architects and engineers object violently to many things about this system of negotiating A-E contracts. First of all, they contend that the fee for professional services is properly the business of the architect-engineer. Further, they maintain, the fee should not be limited in advance of negotiation by any cut-and-dried tabulation, formula or curve. The professional practitioner, in their opinion, is best able to evaluate his services in relation to the difficulty of the work.

They have no quarrel with the right of a government agency to decide whether a fee is proper and acceptable, once a proposal has been made. The amount of the fee, the architects and engineers say, is properly the concern of the government negotiator. It is limited by law to 6% of the estimated cost of a project—in both the Armed Services Procurement Act of 1947 and the Federal Property and Administrative Services Act of 1949.

What the architects and engineers want most is a policy for negotiating lump-sum fees on the basis of a percentage of the estimated project cost. Adoption of such a policy, now used pretty generally by the Navy Bureau of Yards and Docks, would eliminate difficulties like the profit limitation in the Army formula.

By administrative action, the Department of the Army has limited the profit on an A-E contract to 10% of the estimated cost (to the architect-engineer) of performing the work. By contract, the ASCE Manual of Professional Practice for Civil Engineers suggests that not less than 50% should be added to the total of payroll and overhead costs to represent compensation and profit to the engineer on a lump-sum contract.

HHFA tests styles of mobile housing

Neither Congress nor the Housing and Home Finance Agency wants to repeat the mistake of War II in building fixed-to-site temporary housing. Many of the flimsy eyesores erected then are still standing.

To avoid another rash of substandard dwellings, the Defense Housing Act last fall directed HHFA to build mobile or portable government housing in critical defense areas where the needs are purely temporary. The housing agency last week announced seven types of movable and demountable housing selected for testing.

In this and any later trial runs, HHFA and its engineering task force will measure the performance of the test houses in meeting requirements on cost and ease of erection, dismantling, moving to a new location and re-erection, as well as the general livability and durability of the dwellings.

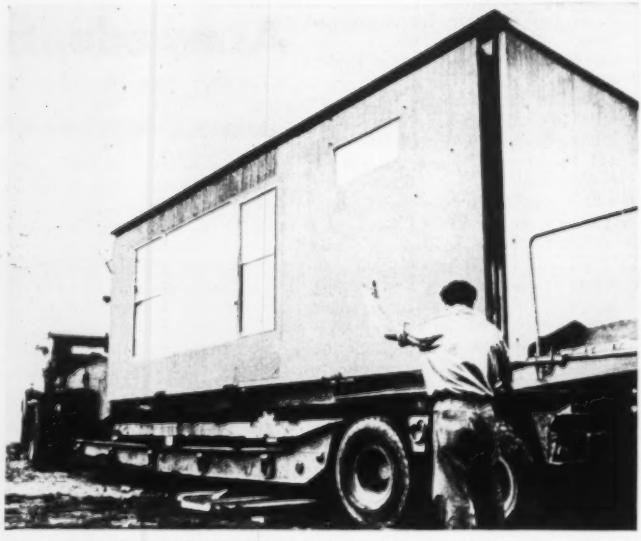
In January the agency asked some 75 firms—including prefabbers, operative builders and trailer coach manufacturers—to submit proposals for mobile and demountable houses. Designs and data came in from 36 producers who offered a variety of the best and latest industry ideas for this kind of housing.

• **Neat packages**—Producers based their designs on functional specifications and other requirements supplied by HHFA. The houses are not substandard. They meet all standards for quality and durability of permanent, fixed-to-site housing. In fact, they are designed to serve in their final locations as acceptable permanent housing. In addition, of course, they must permit easy and economical moving from one location to another.

Houses accepted for test are two- or three-bedroom units requiring a minimum of critical materials and adapted to speedy erection and ready moving with limited use of manpower. Initial cost of producing and erecting the houses was stipulated to be no greater than for comparable fixed-to-site housing.

In its objectives for relocating demountable houses, HHFA aimed at 95% materials salvage and expenditures of only 200 manhours of site labor. Cost for redeployment to a new site 100 miles away was to be held to 25% of the original erected cost. Selected houses in the first trial run meet these requirements, with the exception of estimated manhours needed for five of the seven units.

Some producers are erecting test houses at locations of their own choosing and at their own expense for HHFA testing. Other test units will be purchased by the Public Housing Administration to be installed in critical defense areas.



AMONG THE MODELS SELECTED for tests is this unit marketed by Acorn Houses, Inc., Concord, Mass.

• **Steps in review**—Houses were selected after three-stage review, first by HHFA specialists, second by outside consultants, and finally by an interagency committee. This committee consists of Thomas P. Coogan, director of the Armed Forces Housing Agency; Carroll A. Towne, chief of the Community Operations Branch, Atomic Energy Commission; and Ralph Kaul, HHFA special adviser in charge of the trial-run program.

Of the seven houses, one can be transported as a complete unit, another consists of two factory-fabricated sections joined together in the field, and three are full-folding of partial-folding types. Of the five units that are not factory-assembled, four utilize central mechanical cores delivered as a package.

Estimated costs of the erected houses, exclusive of land and utilities, range from $7,000 to $8,500—well within the cost limits set by law. Floor areas vary from 760 to 1,045 sq ft for the two- and three-bedroom houses. On the basis of the producers' estimates, unit costs of the erected dwellings, ready for occupancy, range from $8 or less to about $10.50 per sq ft. Costs for relocating the houses 100 miles distant run from $1.12 to $2.25 or less per sq ft. Manhours required vary from less than 200 up to 355.

Firms whose models will be tested are: Nicoll Lumber Company, Redwood City, Calif.; Acorn Houses, Inc., Concord, Mass.; Mobilhome Corporation of America, Bakersfield, Calif.; Pressed Steel Car Co., Chicago, Ill.; Transa-House, Inc., Long Beach, Calif.; Gresham Construction Co., Santa Clara, Calif.; Knox Corporation, Thomson, Ga.; South Bend Fabricating Co., Seattle, Wash.

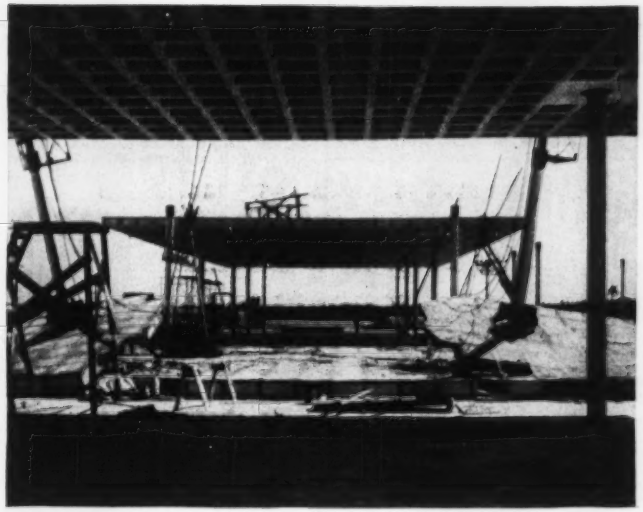
Combine makes low bid as dam hits legal snag

Low bid of $7,426,289 on construction of Box Canyon Dam on the Pend Orielle River near Ione, Wash., was submitted by joint venture of Pacific Bridge Co. of San Francisco, General Construction Co. of Seattle and Shea Co., Alhambra, Calif., in the opening at Newport, Wash., last week.

The bid was for construction of the dam without gates. The trio was also low on two alternates, with $7,721,289 for dam with hook gates and $7,585,039 for dam with vertical lift gates.

On the same day the bids were opened, a second landowners' action was filed in Superior Court at Newport seeking to enjoin construction of the dam, to be built by the Pend Orielle County Public Utility District. The action charged that the plan of financing is unfeasible and that markets for the power to be generated are intangible.

This action followed a dismissal earlier in the week of a landowners' petition asking the Federal Power Commission to revoke its permit for the dam on grounds that height and backwater were misrepresented.



ROOF SLAB CRASHES—A section nine blocks wide and running the entire 50 ft width, broke off when the slab fell. (John T. Bills photo.)

Jack drop causes waffle block crash

Builder Morris S. Burk last week released an official report of the construction accident at Building No. 1, Atlas Terminals of Florida, Inc., near Miami, Fla., which sent one of the newly developed waffle block roof slabs crashing to the ground (ENR Feb. 21, p. 30).

Workmen were in process of lifting the fourth 50 x 50-ft reinforced concrete waffle block roof slab. The lifting operation was proceeding satisfactorily and a height of approximately three feet had been reached by 12:30 p.m. (March 18).

One of the jacks was lifting eccentrically and it was decided to make the usual adjustment to compensate for this, the report states. During execution of the adjustment, there was a failure in the 5 in pipe stub supporting the jack on top of the permanent column, which caused the jack to become unseated, permitting the jack to drop.

The man making the adjustment was thrown to the ground, suffering minor injuries, and the slab and columns were damaged sufficiently in the three-foot drop to require the recasting of the slab. Lifting is proceeding according to schedule on the remainder of the building. Total delay in final completion will be about one week, Burk said.

• **How slab was raised**—The technique for erecting the roof, known as the Youtz-Slick method, was developed by the Institute of Inventive Research, San Antonio, Texas. A hydraulically operated jack was placed on top of a temporary 5-in dia steel pipe on each column. Controlled from a central panel set up on the roof slab, the jack turned two screws that were threaded through a nut on the under side of the lifting yoke, pulling the slab up.

Arkansas governor maps highway changes

A split Pulaski County, Ark., grand jury declined to bring criminal charges in connection with Highway Audit Commission disclosures (ENR Feb. 21, p. 26).

A more tangible result was the approval by the Arkansas Highway Commission of recommendations by Gov. McMath which almost parallel those recommended by the HAC.

McMath recommendations adopted include:

- Finish installation of modern methods in accounting dept.
- Hire a personal officer and pay and retirement benefits.
- Reduce size of commission.
- Discontinue state force jobs except in minor cases.
- Use stockpiled materials as soon as possible on jobs for which purchased.
- Make all purchases from lowest on public bids.
- Map long-range planning program.

The commission also committed itself to immediate programming of $22 million new construction asked by McMath.

NEWS BRIEFS

• **Faces fine**—Grow Construction Co., one of the contractors on the New Jersey Turnpike, was found guilty of manslaughter, by a Union County Court jury last week. Charges grew out of the drowning of two children in a turnpike excavation in May. The state contended the company failed to provide adequate safeguards at the excavation. The company faces a possible $1,000 fine.

• **Pollution hearings**—The Ohio Water Pollution Control Board will hold its first public hearing April 15 on whether an industrial waste can be treated practically. Wastes of food processing plants will be considered. By late September all industries and municipalities must have state permits to dump sewage or other wastes into Ohio streams. Industrial wastes do not come under its control until it has been determined that the pollution can be reduced practically.

• **Power goal**—The Defense Electric Power Administration last week endorsed the new goal of 32 million additional kw for the Defense Electric Power program by the end of 1954.

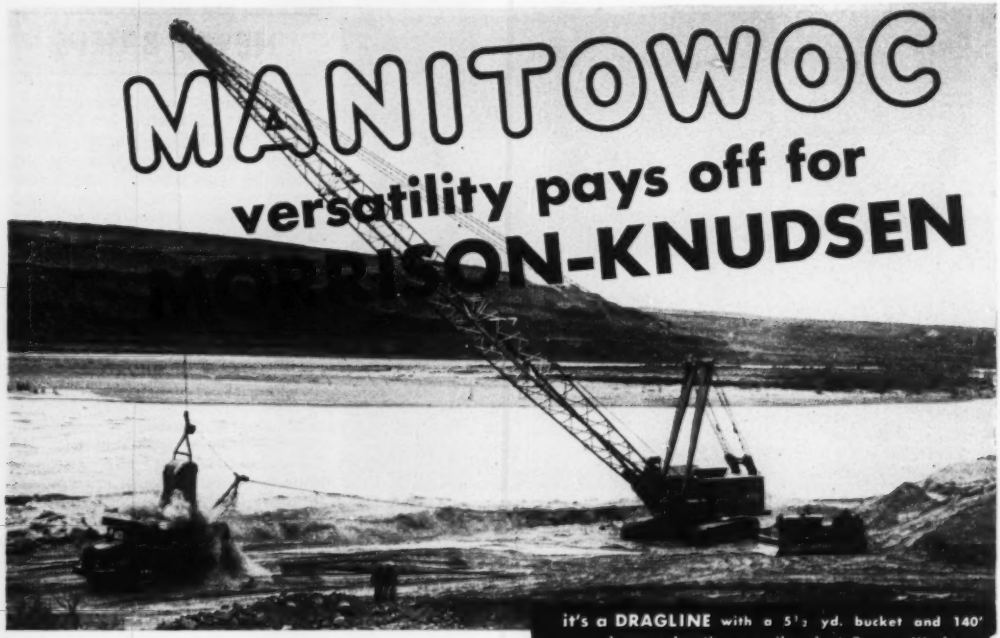
• **Double or nothing**—Nearly two months ago Builders Maurice Fishman and A. Siegler & Sons announced they would build a $17-million development in Maple Heights, Cleveland, Ohio. Last week Builder George Goudreau announced plans to build a $34-million shopping center, apartment and homes project on an adjoining 171 acres immediately across the line in Bedford. Both builders agree the projects will not be able to proceed—it will be one or the other. Legal and political maneuvering are in the offing.

• **Leaky dam**—Higher-than-expected seepage at the $8-million Enders Dam near Imperial, Neb., has forced the Bureau of Reclamation to call for bids on exploratory work to be used in controlling the water loss. Current leakage of around 90 gpd is about 50% above earlier estimates.

• **Deadline coming**—By May 1 industries along the Raritan River in New Jersey must sign contracts to permit financing of the planned $30 million Middlesex County trunk sewer project. If 90% (dollarwise) of contributing industries and municipalities don't sign, its no go for now; and nonconformists will face State Health Department action.

MANITOWOC

versatility pays off for MORRISON-KNUDSEN



it's a **DRAGLINE** with a 5½ yd. bucket and 140' boom relocating a railroad at Tomar, Wash.

On the C. J. Strike Dam, Grandview, Idaho, the versatility of the big 5 yd. Manitowoc 4500 is really paying dividends for Morrison-Knudsen Co., Inc.; like it is for other contractors throughout the nation. One of these husky Manitowocs is handling a variety of jobs — alternating from dragline, to crane, to concrete setting as the situations arise—handling each job quickly, efficiently, economically.

Relocating a railroad at Tomar, Washington called for dragline work for a second 4500; then came a quick switch to shovel for the next job and a fast move to Kemmerer, Wyoming.

Not only are these large excavators "quick change" artists, but they can be shifted from location to location almost as fast as the ordinary small shovel. Ships on standard flat cars or trailers — erection time 3-5 days.

A Manitowoc 4500 will cut your costs too, give you small machine mobility and versatility plus big, low cost capacity. Get complete details. Manitowoc Engineering Works, Manitowoc, Wisconsin.

then it's a **SHOVEL** with a 5 yd. dipper and 50' boom transported to Kemmerer, Wyoming.

now it's a **CRANE** along with another Model 4500, erecting steel, turbines and pouring concrete.

MANITOWOC

SHOVELS 1-5 YD. — Speedcrane — CRANES 18-100 TON

Renegotiation rules revised

By Bill Kearns
Washington Staff

Contract renegotiation policy is now set. This week the Independent Renegotiation Board published final revisions to the tentative regulations issued last January.

The board had asked industry to comment on the proposed regulations. Over 125 contractors, associations, and trade organizations responded, many like the Associated General Contractors asking for oral hearings in support of their suggestions. There were a few new clauses added to the regulations, but in general most revisions were for the purpose of clearing up vague and ambiguous language in the proposed regulations.

For construction men, the board has exempted construction contracts that were entered into before July 1, 1950. But, if these contracts were with the Department of Defense, the Army, Navy, or Air Force, the Atomic Energy Commission, or the Coast Guard, then they are not exempt.

Certain contracts with the Corps of Engineers were taken out from under renegotiation too. Practically all contractors with the Corps of Engineers that are paid for out of civil functions appropriations are exempt, with one big exception. If the contract calls for construction related to the development of hydroelectric power, it is subject to renegotiation.

• **Rule of thumb**—The Corps of Engineers exemption is no blanket coverage, though. It applies only to particular contracts, and the rule of thumb is whether the contract has a direct and immediate connection with the national defense. Normally, keeping open a permanently established ship channel would not be considered renegotiable, if it were a corps of engineers contract.

But, should you have a contract calling for the dredging of a new channel to service a munitions plant, then you'd come up for renegotiation.

Part 1460 of the new regulations spells out some of the factors used in determining excessive profits. Section 12 of this part got a going over to enlarge on the types of risk which the board takes into consideration to figure a contractor's costs.

For example: risks incident to close pricing policies; delivery guarantees; quality and performance guarantees; temporary sacrifice of civilian markets; acceptance of contracts without escalation or similar provisions; and the guarantee of work done by subs.

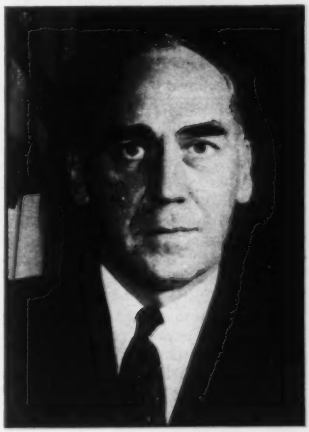
• **Sub contractors**—Small business comes in for its share of government protection under renegotiation too. Section 1460 spells out that favorable consideration will be given to subcontracting and particularly to small business concerns. So, if you as a prime bring small business into the picture through subcontracting, you will benefit when being renegotiated. But, the regulations point out that the greater share of such benefits will accrue to the subcontractor who does the work.

The section dealing in performance prior to July 1, 1950 has been expanded to include broader provisions. It now states that if you got a price increase in 1951 as the result of the operation of a price redetermination clause or some other escalation provision in your contract, or because of a claim arising out of the contract, the board will examine your increase to see if it attributed to performance before July 1, 1950. If so, the amount of the increase will not be renegotiated. This is true only if the contract was not subject to the Renegotiation Act of 1948.

All contractors with the Department of Defense, The Armed Services and 15 other government agencies listed under the regulations are subject to renegotiation and must file. It makes no difference whether your total volume of business during the year was less than $250,000, you still must file a statement. But contractors whose renegotiable business was less than the minimum will fill out only five questions.

• **Deadline**—Reports from contractors are due in Washington on May 1. So, if your fiscal year ended before or with the calendar year, 1951 then your preliminary financial statement must be in the hands of the Renegotiation Board in Washington—not the regional board—on that date.

From there, the report gets a going over by the Washington board and is sent to the region nearest your place of business. Actually, the regional boards will do most of the work and you won't have to come to Washington to argue prices. Generally, the regional board will wind up the entire case.



JOHN T. KOEHLER, chairman of the Renegotiation Board.

However, the Renegotiation Board has divided cases up according to the amount of renegotiable profit—not volume of business—involved. If the profit is $400,000 or less, then the case is decided by the regional board. These are known as Class B cases. Contractors, of course, have the right to appeal to the board in Washington, should they have occasion to dispute the settlement.

If the case involves more than $400,000 in renegotiable profit, then it becomes a Class A case and can be decided only by the big board in Washington. The regional renegotiation boards can only make recommendations.

A complete text of the final regulations was published in the March 25, 1952 issue of the federal register. Copies can be had from Supt. of Documents, Government Printing Office, Washington, D.C., Fifteen Cents.

CMP Reg. 4 amended

The National Production Authority has amended CMP Reg. 4 to allow users of controlled materials to place orders with distributors calling for the delivery of materials 15 days before the beginning of the quarter for which they were authorized.

The amendment will help contractors keep a steady flow of materials coming to the job site.

Construction Business . . .

Highways, schools, pipelines, housing get more steel for third quarter

Industrial construction, the Atomic Energy Commission and the Department of Defense will get less steel in the third quarter.

Because of the reductions, schools, highways, pipelines, housing and commercial construction will get more steel.

The third quarter CMP allotments announced by the Defense Production Administration (ENR Mar. 27, p. 23) reflect a basic change in the thinking of government officials directing the defense buildup.

The switch in emphasis from industrial and direct defense construction to "civilian" construction came at least three months earlier than DPA officials were predicting as recently as last December.

An analysis of CMP allotments to claimant agencies points up the extent of the change in government policy (see chart).

• **PAD gains 12%**—One of the largest increases in steel allotments goes to the Petroleum Administration for Defense—claimant agency for the oil and gas pipeline companies.

In the second quarter, PAD received an allotment of 1,707,000 tons of steel. The allotment will be stepped up to 1,904,000 tons in the third quarter—an increase of 12%.

The Bureau of Public Roads, claimant agency for highways, gets a 35% boost from the second quarter allotment of 260,000 tons of steel to a third quarter allotment of 352,000 tons.

The Federal Security Agency's allotment of steel for school construction was increased 12%, from 130,000 tons in the second quarter to 145,000 tons for the third quarter.

Homebuilders will get more steel beginning July 1. The allotment of steel to the Housing and Home Finance Agency was boosted 20%, from 79,000 tons in the second quarter to 95,000 tons in the third.

• **More steel for machinery**—The construction machinery division of the National Production Authority gets a 10% increase in its third quarter steel allotment. The division received 515,000 tons of steel in the second quarter—will get 564,000 tons in the third.

Building materials will get slightly more steel in the next quarter. These divisions received an allotment of 878,000 tons in the second quarter, will get 904,000 tons—3% more—in the third quarter.

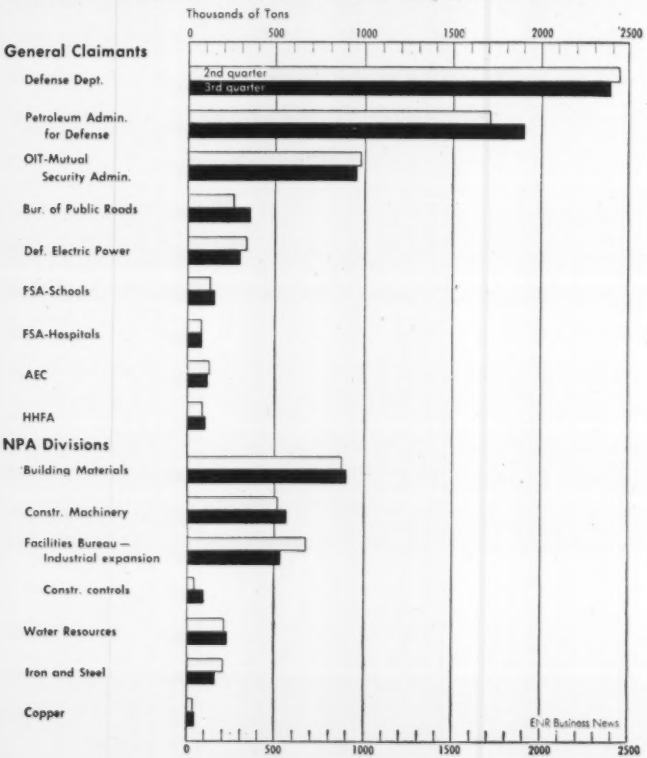
The biggest increase percentagewise comes for the Construction Controls Division of NPA (for commercial construction). This division received 40,000 tons of steel in the second quarter, will get 90,000 tons in the third quarter—an increase of 125%.

Water resources is slated for 6% more steel in the third quarter. The division was allotted 216,000 tons of steel in the second quarter, will get 230,000 tons for the three months beginning July 1.

• **Industrial cut back**—To give more steel to schools, highways and commercial construction, something had to be cut back. Industrial expansion was one of those trimmed. The 671,000 tons of steel allotted for industrial expansion in the second quarter were pared down to 530,000 tons for the third quarter. This was a reduction of 21%.

NPA's Iron and Steel Division which received 210,000 tons of steel to help expand steel capacity in the second quarter was cut back 24%, and will get 160,000 tons of steel in the third quarter.

CMP steel allotments for 2nd and 3rd quarters 1952



Import cuts will hit Australian construction

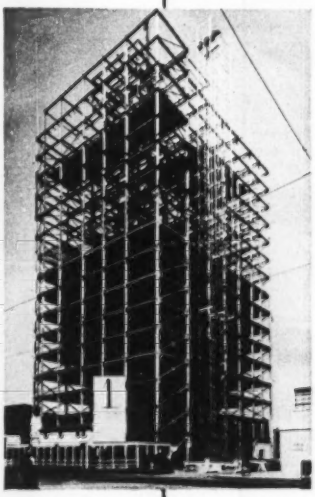
(McGraw-Hill World News)

Hospital and factory construction in Australia may be virtually halted in the near future because of severe import cuts on cement, timber and building materials, just announced by the Australian government.

Homebuilders would not be affected. Locally-produced timber and cement was reserved for them by the Australian government, and stocks are believed to be sufficient to meet their needs.

But hospital and factory builders received building permits on the condition that only imported materials would be used so that construction of houses would not be limited.

Orders on the books which have not been fully paid for are subject to the new restrictions.



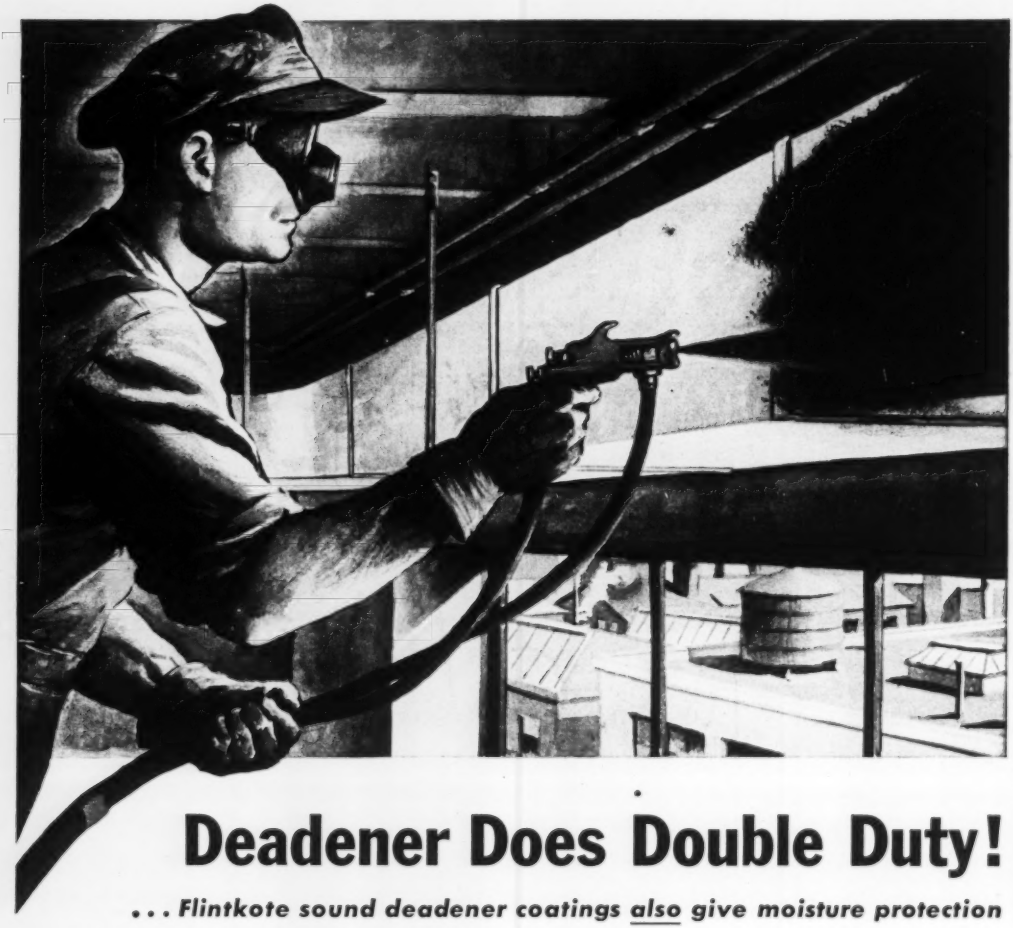
fabricated and erected by INGALLS

Almost noiselessly the all-welded frame of the Texas Company's 17-story office building in New Orleans grows to be one of the tallest welded structures of the South.

The building was designed by Claude E. Hooton, architect. B. M. Dornblatt and Associates were the consulting structural engineers. The Haase Construction Company was the general contractor.

The INGALLS Iron Works Company

SALES OFFICES: NEW YORK, CHICAGO, PITTSBURGH
PLANTS: BIRMINGHAM, ALA., NORTH BIRMINGHAM, ALA., VERONA, PA., PASCAGOULA, MISS., DECATUR, ALA.



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When light metal objects set up howls or humming noises, it's time to go gunning for vibration.

Load up your spray gun with Flintkote Sound Deadener and you'll smother noises *pronto*...all along the line.

In addition, you'll shut out moisture...and so kill two birds with one shot.

Use spray- or trowel-applied Flintkote Sound Deadeners on noisy ventilation ducts, blowers, steel partitions, flues and other light sheet metal.

Choose a high tenacity, quick drying solvent type or a non-inflammable emulsion type sound deadener. Flintkote offers you both.

Get complete information on this two-way Flintkote sound and moisture protection. Increase personnel efficiency...save nerves, and money.

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Products for Industry

Wood vs. steel costs analyzed for school

Early last fall, the Dallas School Board got a severe case of steel-shortage jitters. Construction on desperately needed school buildings was limping badly. One contractor on an elementary school in Dallas' mushrooming Wynnewood section said he'd have to halt with a mere hole in the ground if steel deliveries didn't pick up.

To make matters worse, the allotments available to the Office of Education in Washington threatened to make steel harder to get in the months ahead.

Lacking the crystal ball from which an easing of the steel supply situation could have been predicted, the Dallas School Board decided to adjust quickly to the shortage.

The Board instructed its consulting architect, Mark Lemmon, who also was appointed executive architect for an elementary school in the Casa View section of Dallas, to make drawings that could be used for a one-story school with a wood-supported roof or a steel-supported roof.

• **Purpose outlined**—"We had a dual purpose," said Builder Avery Mays, chairman of the School Board's Building and Sites committee. "We wanted to be able to fall back on wood if necessary and we wanted to get a true comparison between wood and steel construction costs. Some said steel was cheaper; others picked wood. We wanted to get a final answer."

The board was also curious about price differentials between a building with conventional window design and a building with a bi-lateral or clerestory system. Even more than the added light of a bi-lateral system, the increased ventilation appealed to the Texas school officials.

Architect Lemmon volunteered to draw plans, at no extra cost, for: (1) a wood-roofed school with conventional window design; (2) a wood-roofed school with bi-lateral window design; (3) a steel-roofed school with conventional window design, and (4) a steel-roofed school with bi-lateral design.

"As far as I know," Lemmon said, "The Dallas school officials have just got their results."

The cheapest construction, they discovered, was a wood-roofed school with conventional windows. Next came a steel-roof (light aggregate supported on easy-to-obtain light-gage steel joists) and conventional windows. Third cheapest was wood with bi-lateral windows. And the most expensive was a steel roof and bi-lateral windows.

• **Steel frame chosen**—Although there were wide variations in the bidding, Mays said he was surprised that all the contractors rated the four building types in the same order.

After thorough study, the Dallas School Board elected to build a steel-roofed building with bi-lateral window arrangements.

Mays figured that a wood roof based on the bids of Carpenter Bros., the low-bidding firm, would save about $25,000, counting general, electrical and mechanical contracts. He also found out that the added fire insurance on a wood roof of about $1,875 a year would wipe out this saving in 15 years.

"As for the bi-lateral lighting," said Mays. "Well, we just want to try it."

• **Caused extra work**—Contractors generally did a great deal of grumbling at the extra work the extensive plans meant to them.

George Bock, president of Bock Construction Company said he bid only on the wood roof-conventional window building because "I just didn't have the time to work out alternate bids. The school board was asking the contractors to donate too much free time."

Bock added that he had thought the school board would choose the cheapest construction, later discovered he had guessed wrong.

R. B. Carpenter, co-owner of Carpenter Bros., the firm with the low bid for all four kinds of buildings, said "it was like bidding on two jobs" to work up figures. He said the alternate materials for roofs caused the most trouble, but windows also caused considerable computing. In many ways, said Carpenter, his firm had to "bid in the blind."

Hal C. Dyer, another builder, said the added plans meant added work, "but it was well worth it. It gave us comparisons that we couldn't have gotten any other way. Since the same architects made the plans for the same buildings, the comparisons are valid."

Dyer said his base bid was too high because he over-estimated the cost of a wood roof. He said this also explains why his increment for a steel roof was so small.

• **Other alternates**—The contractors had five other minor alternates to bid upon. The contractors indicated that steel lockers would be anywhere from $500 to $3,800 cheaper than wood lockers. Carpenter Bros. was in the middle with a $1,500 reduction accepted by the board.

Carpenter Bros. bid no change in price on aluminum instead of wood windows. The bid was accepted. Six of the contractors figured aluminum windows would cost more than wooden windows—anywhere from $519 to $5,000.

Mechanical contract bids were close. Bids ranged from a low of $117,620 for Texas Distributors Inc. to a high of $132,240. Texas Distributors dropped their bid $142 for the light-gage steel alternate with bi-lateral windows that the board chose.

The board's decision on an alternate resulted in a change of low-bidder, only for the electrical contractors. City Electric Company bid low at $34,096 on a wood roof and conventional windows. For a steel roof and bi-lateral windows, it added $5,588 to the cost.

On the other hand, Southern

(Continued on next page)

HERE'S HOW THE EIGHT GENERAL CONTRACTORS BID:

Contractor	Wood Roof Conventional Windows	Wood Roof Bi-lateral Windows	Steel Roof Conventional Windows	Steel Roof Bi-lateral Windows
T. C. Bateson Co.	$457,800	No Bid	$11,000	No Bid
Bock Const. Co.	442,212	No Bid	No Bid	No Bid
A. W. Brunson Co.	449,875	$44,900	21,100	67,600
Carpenter Bros.	431,500	30,000	18,000	37,000
Dolph Const. Co.	442,900	33,000	18,000	51,000
A. H. Ewing Sons	450,671	46,643	44,553	45,872
Hal C. Dyer	515,207	34,939	13,335	49,913
Meers Const. Co.	474,837	34,159	3,500	40,211

The bid on the left was the base bid. Other bids on alternates show increments over the base bid.

HOW TO HANDLE
WET JOBS

#4 of a Series

FAIRCHILD ENGINE
& AIRCRAFT BLDG.

Islip, Long Island, N. Y.

Sub. Contr.: Washington Conc. Corp.

Gen. Contr.: John W. Harris

WATER LOWERED 11 FT AT
RATE OF ONE FT PER HOUR

ANYONE WHO HAS tackled a wet job in extremely coarse sand and gravel knows what torrents of water drain through such pervious soil. Yet 11 hours was all it took for the Griffin Wellpoint system shown in photo to give a bone-dry subgrade. Excavation of the 20,000 sq ft area then proceeded rapidly by tractor-scraper.

Upon the recommendation of Alman, Fordice & Handy, architects, the wellpoint system was maintained in operation until danger of flotation was eliminated by construction.

• Footnote: drainage of surrounding area caused 4 ft drop in static level of a well 400 ft away. Got a "big dry"? Specify Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Construction Business . . .

States Electric bid $34,830 on a wood roof with conventional windows, and added only $4,396 on chosen alternates. Thus Southern States squeaked through to a winning bid by $458.

Final contract price for the Case View School was $624,526. The building is designed for 800 to 1,000 pupils and contains 43,495 sq ft of floor area and 695,271 cu ft of space. Thus, the total cost averages $6,240 to $7,800 per pupil, $14.40 per sq ft and $0.90 per cu ft.

Industrial projects get NPA go-ahead

The National Production Authority announced that it had approved applications for second quarter allocation of materials for 1,438 industrial expansion building projects. Total cost will exceed $7 billion. (See table below.)

NPA said that it denied 1,253 applications for new starts in industrial expansion because of the exhaustion of materials for the second quarter.

Similarly, of approximately 2,700 applications for second quarter allotments in commercial construction projects, a substantial number had to be deferred because of the shortage of controlled steel, copper and aluminum.

The Defense Production Administration and NPA recently announced, however, (ENR Mar. 20, p. 24) that nearly all applications on hand for both industrial and commercial construction projects will be approved for allotment in the third and subsequent quarters.

Of the twenty-three industrial expansion programs listed in today's release, the chemical program has the largest number of projects with 380. But the Iron and Steel and Allied Products program, with 285 projects, has the greatest total estimated cost with $2,237,316,867.

Fabricated steel bookings decline

February bookings of fabricated structural steel totaled 202,810 tons, slightly less than the 215,031 tons contracted for in January, according to the American Institute of Steel Construction.

The two-months total of 417,841 tons is 32% less than the 618,119 tons booked in the corresponding period of 1951. This reflects "the effects of the drastic allocations imposed upon the construction industry," AISC said.

Shipments for February amounted to 248,443 tons. This was a slight increase over January, according to AISC.

INDUSTRIAL EXPANSION PROGRAM

Summary of Projects Issued Second Quarter 1952 Allotments

Program	Category	Number of Projects	Total Estimated Cost
1	Aircraft	122	$ 795,759,997
2	Aluminum & magnesium	45	644,258,385
3	Building materials	39	68,804,908
4	Chemicals	380	1,520,252,680
5	Consumers goods	15	36,597,811
6	Containers & packaging	20	42,094,226
7	Copper & brass	16	24,633,810
8	Electrical equipment	31	53,798,256
9	Electronics & communication equipment	30	107,029,543
10	Industrial & agricultural equipment	167	487,686,340
11	Iron & steel, ferro alloys, etc.	285	2,237,316,867
12	Leather & leather products	0	
13	Lumber & lumber products	10	10,757,750
14	Miscellaneous metals & minerals	28	85,638,092
15	Ordnance & shipbuilding	63	167,131,305
16	Pulp & paper	68	277,903,716
17	Railroad equipment	4	11,526,600
18	Rubber	28	86,477,220
19	Scientific & technical equipment	36	137,623,982
20	Textile	55	336,199,448
21	Tin, lead & zinc	2	1,615,000
22	Printing & publishing	10	6,856,613
23	Oil field & gas field machinery	4	815,343
	Total	1,458	$7,140,777,892

Building owners push for new standard

Joining with several other groups, the National Association of Building Owners and Managers said last week it is pushing hard for the establishment of a nationwide standard for measuring office or commercial floor space.

A special committee of NABOM met in Chicago to discuss progress on the move with the American Standards Association, which is sponsor of the drive for a new standard.

Advantages of such a code—in addition to the obvious one of standardizing calculations by owners and occupants of business structures—are expected to accrue in cost estimating on new structures. There is at present no national standard—many areas relying solely on the owners' own estimates, others—like New York City—on a standard system (adopted in 1915) suitable for the particular area only.

N. Y. pier improvement to cost $90 million

A five-year-old, $57 million program for modernization and improvement of New York City's waterfront piers will now cost $90 million and take 12-15 years instead of the originally-estimated 10 years, city officials have discovered.

Reporting to the Board of Estimate, Edward F. Cavanaugh Jr., commissioner of Marine and Aviation said revisions of estimates were necessitated by generally rising construction costs.

On the basis of the rise in ENR's construction cost index in the years since 1947—from 413 in that year to 550.60 for March, 1952, the city's estimates of the current cost of the improvement program are somewhat high. On the basis of the index, the cost should now be about $76 million. To reach the $90 million figure, the ENR index would have to go up to about 651 (over the 1913 base) over the next 12 to 15 years.

Recommend new standard for aluminum sheet

The Aluminum Sheet Division of the Aluminum Association has proposed a commercial standard for aluminum sheet for general construction purposes.

The proposal covers quality standards and methods of test of suitable corrosion resistance under conditions of normal usage for aluminum sheet intended to be used as building material.

The compressor went into the hole

...but the contractor didn't!

(A true story based on Hartford File #10797)

We were towing our air compressor from one job to another. Moving right along, too. On a bend, it broke loose from the tractor, landed in a ditch, and banged itself up badly. Repairs cost plenty—$1267.15. But this didn't put the company in a hole. We had Hartford Contractors' Equipment Insurance, so Hartford footed the bills.

Maybe not this week . . .

Maybe not this month . . .

But sure as you're in the construction business, something like this can happen to one of your expensive machines sooner or later. And when it does . . .?

When it does, *provided you've got Hartford Contractors' Equipment Insurance* . . . you'll have cash on the barrelhead to pay for repairs.

See your Hartford Fire Insurance Agent or insurance broker. At moderate cost, you can make sure that help—and cash—are standing by when needed.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

WHOLESALER'S PRODUCTS

Every wholesaler obviously endeavors to carry in stock the kind of merchandise his trade requires and demands. Under normal conditions he can come pretty close to supplying the products his customers ask for; he has the opportunity of selecting from many sources the products which he believes his customers would find most acceptable.

His function and opportunity are no different today—only much more complex. The task of finding merchandise in sufficient quantities, and of the right quality to satisfy his trade, is quite perplexing to him at times.

The good wholesaler knows his responsibilities and strives to maintain his standards at the same level that has built his reputation. You know him by the products he handles and the service he renders under any conditions.

The good wholesaler is conscientious. He can still be discriminating in the choice of brands he stocks for you, for he keeps his eye on tomorrow as well as today and never loses sight of his purpose to render customer satisfaction at all times.

The products he handles reflect the kind of wholesaler he is—a reputable wholesaler handles only reputable merchandise—representing well-advertised brands of dependable quality. In tubing, Wolverine is recognized as a top quality product that you should try to get whenever it is available.

WOLVERINE TUBE DIVISION, Calumet and Hecla Consolidated Copper Company, Incorporated, Manufacturers of seamless, nonferrous tubing, 1457 Central Avenue, Detroit 9, Mich. Plants in Detroit, Mich. and Decatur, Ala.

BUY FROM YOUR WHOLESALER

Housing bond offering tests market

Looked on in financial circles as another test of the market for municipal bond issues, the Public Housing Administration April 15 will offer 73 municipal housing issues totalling more than $167 million.

The bond offering will be the second such sale in the current year, and the fourth of its type under FPHA auspices. Bond issue values range upward from a $550,000 offering of Cullman, Ala., to a $10.9 offering by Milwaukee, Wis.

• **Optimism** – Habitually cautious, money markets nevertheless expressed ample confidence that the issues would be snapped up at advantageous prices.

Root of the optimism was the good results of 1952's first such sale (ENR Jan. 24, p. 72) when $134 million worth of housing bonds were disposed of at an average yield rate of 1.959%—somewhat below the rate on the two offerings in 1951.

Paradoxically, another cause is the effect of prospects of increasing federal tax rates. Underwriters have pointed out repeatedly that such a rise brings more and more money into the municipal financing field, where bonds are tax-free.

• **Other advantages** of these offerings include the fact that they are all issued under FPHA protection—which means that the agency must see to it that the local authorities meet their obligations, even if FPHA contributions are necessary.

• **Evidence**—One evidence of the acceptance of municipal bonds by the public was clear in the purchase of a $6 million Grand Rapids, Mich., school district offering.

The bonds were sold to Drexel & Co. and associates—underwriters—in a night sale on March 18 (for a net interest cost of 1.51426). They were re-offered to the public Wednesday morning, and by Wednesday evening, all but $40 of the bonds were sold.

More building bonds due as U. S. drops credit ban

Bond dealers this week looked for a quick upsurge in offerings of issues to finance state and municipal construction, as the U. S. government cut away the basis for the voluntary restraint committees that have been holding down such issues.

President Truman took the step through a letter to Mobilization Director Charles E. Wilson, in which he directed Wilson to exempt state and municipal financing. His letter had the effect of ending the work of the Voluntary Credit Restraint committees which have been operating regionally to screen proposals for bond issues.

Made up of members of the local financial fraternity, these committees have ruled as to whether the bonds would be inflationary. If they decided the bonds would be inflationary, they turned thumbs down—and under the voluntary agreement there would be no takers if the governmental unit went ahead and offered its bonds anyway.

First result of the removal of restraints: Oregon, Montana and West Virginia were expected to rush in first with soldiers' bonus bonds. However, many plans for construction financing, shelved because of the restraint program, are now expected to be refurbished and brought out.

Under the President's order, the only restriction now (other than materials strictures) will be the good judgment of public officials.

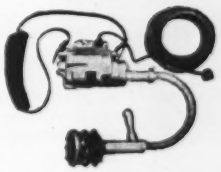
Finance briefs . . .

• **N. J. building bonds**—To cope with rising building costs, New Jersey voters will be asked to approve a $25 million bond issue to finance a building and expansion program for state institutions. A similar issue was approved in 1949, but additional money was needed.

• **Costs limit financing**—Oklahoma's Turnpike Authority said it would hold off bids on an estimated $7 million in bonds to complete financing their turnpike between Oklahoma City and Tulsa until all of the road is put under contract. The new bond issue would supplement an original $31 million issue.

• **Private investment**—A private capital organization with a capitalization of $100 million has been suggested to supplement the U. S. "point 4" program for underdeveloped areas of the world has been suggested in Washington. The proposed "International Finance Corporation" would work under federal auspices to insure coordination with point 4 aims.

"BERG"
CONCRETE SURFACER
MODEL A



"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

SAMSON BAR CUTTERS

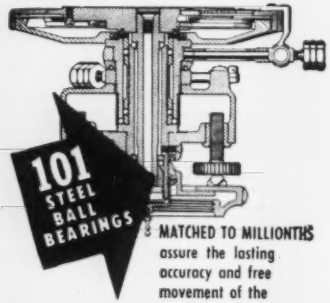
- All Steel Construction
- Unbreakable Frame
- Easy Operation
- Immediate shipment

Write for catalog of Metal Working Equipment

CAPACITY	No. 20	No. 23	No. 26
Rounds	⅜"	¾"	⅞"
Squares	½"	⅝"	¾"
Flats	2"x¼"	2½"x5/16"	2½"x⅜"
PRICE	$47.15	$63.00	$72.00

f.o.b. New York, subject to change

JULIUS BLUM & CO., Inc.
334A West 22nd St. New York 11 • WAtkins 9-7022



MATCHED TO MILLIONTHS assure the lasting accuracy and free movement of the

BRUNSON BALL-BEARING BASE*

USED ON ALL BRUNSON SURVEYING INSTRUMENTS

Permanently lubricated and factory sealed against dust, the Brunson Ball-Bearing Base allows a total eccentricity of not more than + or — ¼ second of angular error. To obtain this accuracy, it is necessary for us to engineer and produce in our own plant these Bearings and spindles—each stabilized to the accuracy of precision gauge blocks. Because these ball bearings are pre-loaded and operate under tension, they remove all grease from the point of contact. This assures greater accuracy than any other type of bearing which must allow for grease or oil film. *Write for details.* *Patented.

LASTING BRUNSON ACCURACY

BRUNSON INSTRUMENT COMPANY, INC.
1405 Walnut St. • Kansas City 6, Mo.

UNI-BATCH
Cost Saving Equipment

Use With 6S to 16S Concrete Mixers—Inclusive

Charge bin with end loader having mechanical or hydraulic type bucket.

Pat. Pending

Pull unibatch behind pick up truck.

Write or phone for more details

Winslow Scale Company
Terre Haute, Indiana—P. O. Box 1198

Used In 30 Different States

UNIT PRICES

Kentucky highways

Unit prices received from 1949 to 1951 by the Kentucky State Department of Highways show little change in some items and drastic increase in others. Not shown in the prices here are those for metal plate arch in sizes 18″ x 11″ to 21′ x 8′-4″.. These show for 1951 at $4.50 to $70.00 per lineal foot. They were not used in previous years.

Average unit prices for successful bids

Item	Unit	1949	1950	1951
Asphalt, rock	t	$13.48	$13.07	$14.05
cement Pac-5	gal	0.17	0.14	0.17
cutback, Mc-4	gal	0.14	0.12	0.14
Bit conc-base CL-I	t	6.65	6.11	6.59
conc binder CL-I	t	6.48	5.58	6.64
conc surface CL-I	t	6.76	6.07	7.05
coated aggr CL-F bind	t	7.28	7.06	7.90
material for mix	gal	0.149	0.132	0.15
Bronze plates CL-B	lb	1.08	1.02	1.45
Catch basins, remove	ea	41.54	44.20	90.95
Catch basins, stnd	ea	170.67	151.19	305.56
Clearing & grubbing	ac	81.76	78.67	109.25
Clearing & grubbing	mi	517.88	449.05	508.65
Concrete, class A	cy	46.84	46.47	51.56
class B	cy	44.19	43.40	45.92
class D	cy	113.18	93.27	139.65
Concrete steps, remove	cy	8.13	7.88	10.00
Curb, header	lf	1.50	1.26	1.43
Curb, integral	lf	1.18	0.95	0.69
Curb & gutter, conc	lf	2.25	2.08	2.62
Curb & gutter, remove	lf	0.79	0.70	1.02
Ditching & shaping	mi	728.84	691.39	901.92
Ditch, surface 1 sf	lf	0.09	0.059	0.15
Ditch, surface 2 sf	lf	0.19	0.113	0.27
Earthwork	mi	4,070.39	3,561.09	3,924.42
Excavation, roadway	cy	0.56	0.49	0.55
borrow	cy	0.51	0.48	0.58
trench, & shoulders	cy	0.71	0.54	0.45
struct, unclass	cy	6.03	3.53	4.18
struct, common	cy	5.25	4.23	5.21
struct, solid rock	cy	9.33	9.32	10.15
Final dressing	sta	20.02	17.27	17.35
Flume	lf	4.17	3.56	3.78
Flume inlets	ea	201.95	178.91	232.74
Gravel, bank or creek	t	1.37	1.00	1.20
Gravel, river	t	2.67	2.02	2.08
Guard rail remove	lf	0.43	0.50	0.60
Hedge, reset	lf	0.67	0.74	0.81
Hedge, remove	lf	0.70	0.49	0.60
Lumber com treat struct	Mbm	307.00	307.16	345.35
Man holes	ea	325.00	174.03	256.75
Masonry, conc remove	cy	8.58	7.28	9.23
Overhaul	stay	0.019	0.015	0.013
Pavement, cmt conc	sy	3.99	4.02	4.33
app slab	sy	14.62	11.00	8.00
Piling, conc 18" driv	lf	6.01	5.68	5.11
conc driv	lf	5.77	5.60	5.35
untreat timber driv	lf	1.07	1.18	2.03
treat timber driv	lf	1.48	2.39	1.89
Metal pipe arch 36" x 22"	lf	10.00	7.00	7.97
58" x 36"	lf	15.84	24.00	18.40
65" x 40"	lf	18.76	27.00	20.15
72" x 44"	lf	25.54	27.27	26.11
77" x 57"	lf	33.43	35.05	33.67
93" x 64"	lf	37.18	34.70	35.54
123" x 77"	lf	50.11	53.49	47.89
142" x 90"	lf	64.98	55.00	60.00
159" x 96"	lf	69.60	65.00	65.14
Pipe entrance CM-15"	lf	2.44	2.86	2.69
CM-18"	lf	3.05	3.10	3.47
CM-24"	lf	4.15	4.20	4.73
CM-30"	lf	5.94	5.62	5.82
CM-36"	lf	8.20	7.44	9.58
Pipe BCCM 18"	lf	3.96	4.24	4.06
BCCM 24"	lf	5.71	6.24	5.84
BCCM 30"	lf	6.89	7.70	7.71
BCCM 36"	lf	9.90	10.38	11.05
BCCM 42"	lf	12.55	13.34	13.17
BCCM 48"	lf	15.20	15.08	15.25
Pipe Culvert RC 12"	lf	1.89	2.11	2.62
RC 15"	lf	2.55	2.62	3.06
RC 18"	lf	3.55	2.79	3.77
RC 24"	lf	4.88	4.94	5.34
RC 36"	lf	9.02	9.00	12.11
RC 42"	lf	11.64	11.42	12.56
RC 48"	lf	15.59	15.22	16.75
RC 54"	lf	19.65	18.66	20.78
RC 60"	lf	23.16	33.00	22.00
Pipe sewer RC 15"	lf	2.68	3.20	3.10
Pipe entrance RC 15"	lf	2.75	2.65	2.84
RC 18"	lf	3.00	3.58	3.49
RC 24"	lf	4.51	4.87	5.09
Pipe removing	lf	1.30	1.14	1.23
Pipe relaying	lf	1.51	1.36	1.41
Project monuments	ea	30.81	31.44	34.63
Riprap	sy	5.00	4.00	4.00
Scarifying & reshaping	sy	0.06	0.10	0.12
Sidewalk-conc-4"	sy	3.35	3.28	3.84
Sidewalk-conc-remove	sy	0.43	0.71	1.11
Slope protection	sy	4.71	4.51	5.96
Sod	sy	0.72	0.92	0.87
Steel reinforcing	lb	0.090	0.106	0.128
structural	lb	0.157	0.153	0.19
Tar, refined RT-2	gal	0.190	0.181	0.219
Trees & stumps, removed	ea	34.31	24.25	48.91
Water	gal	0.10	0.06	0.09

Water treatment, Tex.

Houston's new $4.9 million water treatment plant (ENR Sept. 27, 1951 p 62) was awarded March 6 to Brown & Root, Inc. Freeze, Nichols & Turner are consultants; F. N. Baldwin is Director, Department of Utilities for the city. The plant will adopt an open-air industrial design developed for the mild Gulf Coast climate. The lump sum prices reported include distribution pumps, chemical storage and structural units for a capacity of an average annual rate of 50 mgd, based on a filter rate of 2 gallons per sq. ft. per minute, equipped to provide a capacity of 334 mgd at the same rate per minute and arranged for further expansion; administration building; and pumping station to provide raw water for industrial use, capacity 75 mgd, estimated at a cost of $344,000. The plant is to be completed in a year and a half to two years. Bidders include:

1	C Brown & Root, Inc., Houston, Texas	$4,854,210
2	R. P. Farnsworth & Co., New Orleans, La.	$5,481,705
4	Thomas Bate & Sons, Houston, Texas	$5,874,335

Bids: 2-27-52	Unit	Quantity	Unit Prices 1 C	2
Items				
Base bid for const of water purf plant & ind water pump sta basic plant compl	ls	1	$4,699,000	$5,287,000
F&i pump & motor unit A-4 compl	ls	1	25,000*	29,000*
unit B-4 compl	ls	1	47,000*	76,000*
unit B-5 compl	ls	1	47,000*	76,000*
unit F-4 compl	ls	1	27,500	33,700
F&i filter surf wash sys compl	ls	1	30,000	26,100
F&i suff acid facilities compl	ls	1	21,000*	19,300*
F&i carbon slurry facilities compl	ls	1	59,000	68,600
Const of cov passage & cov car park compl	ls	1	8,000*	20,200*
Const landscpng compl	ls	1	21,000	48,000
Const 5-MG grnd stg tank no. 2 compl	ls	1	126,000*	156,400*
Conc extra class A	cy	100	$35.00	$46.00
extra class B	cy	40	30.00	30.00
extra class C	cy	40	30.00	40.00
extra class D	cy	10	40.00	50.00
Extra struc exc	cy	200	3.00	2.00
common exc	cy	2,000	0.50	0.75
reinf at compl in p	lb	30,000	0.15	0.11
Under-ream shaft extra 12" to 18" OD	lf	80	7.00	2.00
22" to 27" OD	lf	60	10.00	4.50
30" to 40" OD	lf	30	12.00	10.00
Extra bell foot	cy	30	50.00	30.00
Extra cond 3/4"	lf	1,000	0.30	0.64
1"	lf	1,000	0.40	0.80
2"	lf	500	0.80	1.45
Extra TW wire #12	lf	10,000	0.05	0.06
#8	lf	1,000	0.08	0.11
#4	lf	1,000	0.25	0.22
Extra #1/0 RH 5000-V wire	lf	600	0.60	0.80

* Not included in evaluated bid or contract

Alternate proposals to base bid, add or deduct as noted

Base bid				
Furn circ type clarifier instead "Squarex"	ls	1	no bid	deduct $18,700
Furn belt type instead loss-in-weight dry chemical feeders	ls	1	no bid	deduct 11,000
Furn gate valves instead butterfly valves	ls	1	no bid	add 110,000
Furn gate valve instead butterfly valve				add
unit B-4	ls	1	no bid	2,700
unit B-5	ls	1	no bid	2,700
unit F-4	ls	1	no bid	1,500
tank #2	ls	1	no bid	7,000

Roofing and Siding that saves these *Critical* materials . .

Galbestos...

Galbestos Metal is steel completely protected; in three forms of corrugation; in three colors, in two standard widths and in lengths up to 12 feet. It is unexcelled for roofing and siding of industrial buildings. Installations all over the world testify to its ability to withstand all types of weather and rigors of climate.

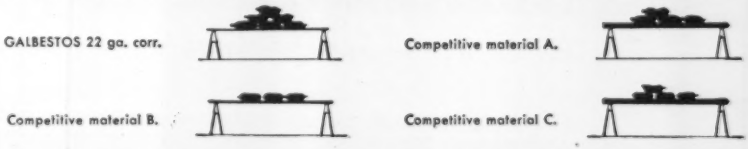
Robertson has devised a Top-Speed Method of Fastening which enables an erection crew to place a bigger area with greater speed and safety than by former methods. The over-all cost of the building is greatly reduced.

WRITE FOR THESE FREE CATALOGS

1. Galbestos
2. Top-Speed Fastening
3. Top-Speed Insulation

STEEL Galbestos is steel, completely protected, then corrugated. It has great strength yet is lightweight: thus permitting wider purlin and girt spacing. Studies by professional structural engineers show over-all steel saving as high as .8 lbs. per sq. ft. over other roofing and siding materials on truss spans up to 134 ft. During World War II, the W.P.B. proved many times that steel—also time, manpower, transportation space and cost—could be saved by using steel.

Comparative load carrying capacities on equal spans of various roofing materials.*

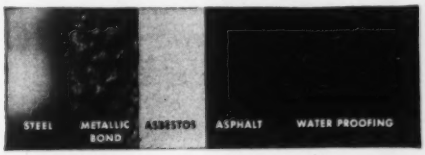


ZINC Galbestos uses no more zinc than ordinary galvanized steel, but Galbestos makes that amount of zinc last longer by protecting it with successive layers of noncritical materials.

THIS IS GALVANIZED STEEL

The protection on galvanized steel ends here.

THIS IS GALBESTOS



Galbestos adds these additional protective coatings to prolong the life of the zinc.

COPPER The Galbestos bond of asbestos felt-to-zinc-to-steel is so strong that Galbestos can be fabricated on standard sheet-metal shop equipment into downspouts, gutters, flashing and other forms, replacing copper, aluminum, lead and galvanized steel. Galbestos requires no maintenance.

MANPOWER Galbestos sheets arrive at the job pre-cut for quick, easy erection. The exclusive Top-Speed Fastening Method eliminates all inside scaffolding and enables workmen to erect a far greater area of roofing and siding (up to 2½ times) with Galbestos than with outdated materials and fastening methods.

Man-Hours to Erect 100 sq. ft. in One Hour*

SHIPPING SPACE Galbestos nests well, is less bulky, weighs less; thereby saving many times the space required by a quantity of other competitive roofing and siding materials to cover a similar area.

A FREIGHT CAR OF GALBESTOS will cover 2 to 6 times the area of competing materials

A STEAMSHIP CARGO OF GALBESTOS will cover 2 to 7 times the area of competing materials

A TRUCK LOAD OF GALBESTOS will cover 2 to 5 times the area of competing materials

*These comparisons are necessarily relative and approximate, and are based on our best available information.

Use steel to save steel... take time to save time

H. H. ROBERTSON CO.

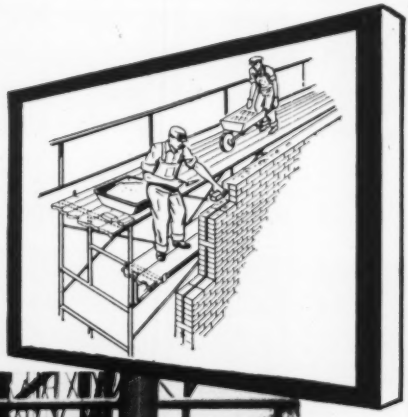
2420 Farmers Bank Building
Pittsburgh 22, Pennsylvania

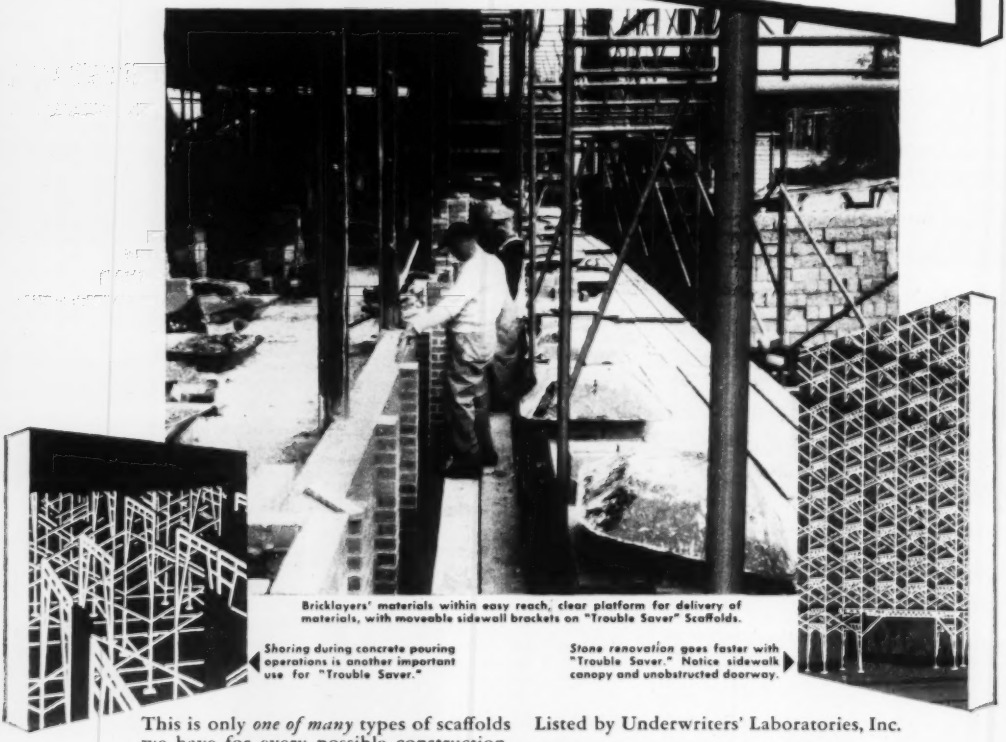
Offices in All Principal Cities in the U.S. and Canada

World-Wide Building Services

PREFABRICATED
to Cut Your Scaffolding Costs!

"TROUBLE-SAVER"
Sectional Steel Scaffolding





Bricklayers' materials within easy reach, clear platform for delivery of materials, with moveable sidewall brackets on "Trouble Saver" Scaffolds.

Shoring during concrete pouring operations is another important use for "Trouble Saver."

Stone renovation goes faster with "Trouble Saver." Notice sidewalk canopy and unobstructed doorway.

This is only *one of many* types of scaffolds we have for every possible construction, renovation and repair job. No tools are required to assemble and disassemble. Fully *coped and welded* frames, and full *double diagonal* bracing give greatest safety and rigidity. Prefabricated "Trouble Saver" Scaffolding, which we distribute, can help you increase profits by substantial savings in time and labor.

Listed by Underwriters' Laboratories, Inc.

Remember this: We have *all* types of modern scaffolds. That's a convenience *no other supplier* can offer you. Our stocks of scaffolding, spotted in major cities from coast to coast, are the largest and most complete. *One* source for every type scaffold! *Whatever your job . . . we can scaffold it for you with the* RIGHT *scaffold.*

RENTALS—SALES
You can rent or buy "Trouble-Saver" Scaffolds, whichever best suits your needs.

GOLD MEDAL LADDERS SCAFFOLDING

for Greater Safety...Efficiency...Economy

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. ENR, Long Island City 1, N. Y.
West Coast Plant: 6931 Stanford Ave., Los Angeles 1, Calif.

Get the facts! Write today for free Bulletin PSS-24. It shows how "Trouble Saver" can help you cut scaffolding costs. Photos of actual installations and detailed sketches are featured.

Pressure on for more money as labor looks to new rule

With the ink scarcely dry on the Wage Stabilization Board's statement of policy providing for wage raises for construction labor, new trouble was mounting fast for the nation's sprawling construction industry last week.

In center after center, according to ENR's correspondents, labor and employers were holding up their traditional spring negotiations while they sought interpretation and clarification of the order—both in terms of immediate money in the pocket for labor, and possible higher costs for management.

WSB declared less than three weeks ago (ENR March 20, p. 23) that it would let construction pay go up a total of 22½ cents an hour with certain reservations—15cents an hour in wages, 7½ cents an hour as contributions to health and welfare benefit funds. The reservations were that the increases in paid holidays, paid vacations, pensions and other fringes (except welfare) would be charged against the 15 cent raise.

• **Bellwether**—New York City—biggest center in the country and probably most strongly organized both from an employer and labor point of view—was typical of what was happening. Decisions in the city are traditionally pattern-setters for large surrounding areas.

New York building labor—unhappy for months over the workings of a three-year collective agreement its leaders signed in 1950—has been pushing for reopening of the agreement. Under terms of the collective pact, labor got an escalator based on the BLS cost-of-living index for the city. If the index went up 10% over June, 1950, labor would get the raise in cash, figured to the nearest five cents. In October, 1951, the index did go over the 10%—but by a tiny fraction which couldn't be figured very well in terms of "the nearest five cents." No raises were granted.

Using this point as a wedge, labor leaders have been quietly negotiating with their employers—through the city's Building Trades Employers' Association—for months.

But now they have a new force behind them: The pressure from their rank and file, who read that 15-cents-an-hour-raise statement in their newspapers.

• **Switch in emphasis**—So the tenor of the negotiations have changed—from adjustments in the collective agreement, to pressure for more money, straight out.

So serious is the problem that the employers last week had organized a completely new negotiating committee, with enough employers represented to match the 13 building-trades unions who are parties to the agreement, and with much stronger powers from their respective employer-groups, to negotiate a changed set of rules.

Heading up the discussions are the city's three key figures in these affairs: Peter W. Eller, who as chairman of the BTEA board sits as chairman of the joint committee on collective bargaining; Howard McSpedon, president of the city's Building Trades Council, who sits as co-chairman; and Fred F. Driscoll, BTEA president and chairman of its negotiating committee.

The tenor of the new negotiations, it was reported, have remained friendly (also in the city's tradition), but the pressure from the rank-and-file is great.

Best guess seems to be that a new agreement will be reached within a week or two—and that it will include higher pay all around.

Meanwhile, ENR's correspondents in other cities reported this situation:

• **Cleveland**—Fourteen trades had signed at $2.97 per hour which was a rise of 5% and permissable under

(*Continued on next page*)

HOWARD McSPEDON, president of New York City's Building Trades Council. Also co-chairman bargaining committee.

FRED F. DRISCOLL, BTEA president and chairman of the negotiating committee of the BTEA.

PETER W. ELLER, chairman of BTEA board and chairman of joint committee on collective bargaining.

Labor . . .

the old former 10% "catch up" formula. Employers had promised to petition for three cents per hour additional which would have made rate $3.00 per hour. Old rate was $2.826 per hour for most building trades in contracts which expired March 1st.

After the Washington announcement building craftsmen began to demand—in addition to the 5% signed for—the additional 15 cents per hour Washington permitted and 7½ cents for a welfare fund. This would be a total increase of 37 cents per hour or a rate of $3.195 per hour.

Last contract signed by bricklayers, two years ago, was for $2.70 per hour. Since then a prevailing rate of $3.00 per hour has been certified for that trade. So the bricklayers are presently asking that the 37 cents be added to their present rate bringing them to $3.37 per hour.

Employers guardedly say a strike of building tradesmen is quite possible.

• **Baltimore**—Due to recent decision in Washington all trades are trying to negotiate a new contract.

The carpenters still have another year to go on their present contract, so they may have to stay with present rate. Most other unions are asking for from 15 cents to 25 cents per hour more plus 7½ cents for fringe benefits.

Employers have decided to present a united front. They will go along up to the 15 cents per hour, but on fringe benefits they will only sit down and discuss the matter at this time.

All union contracts ran out March 31st and they are under negotiation now, but it is extremely doubtful that changes will take place for several months.

Nearly all contractors figuring competitive bid jobs are adding 15 cents per hour to labor costs to cover possible raises.

• **Kansas City**—According to Perin McElroy, head of the building trades unions, the recent ruling by WSB to permit a raise will be felt in the negotiations (now under way) for new contracts to be dated April 1st.

• **Chicago**—Some increases expected in the near future—labor groups have been, or will be, meeting with contractors regarding higher rates.

• **Tennessee**—Construction work in Tennessee might come to a halt when present labor contracts with members of the Associated General Contractors expires May 1. In fact the building trades unions set a March date for AGC to make answer to the demands for a 15 cent hourly wage increase and five paid holidays a year.

State AGC President J. E. Willard said that the holiday demand is unprecedented in the private construction industry in and around Knoxville. He estimated that 18,000 workers are involved in the union demands. The demands of the unions follow very closely the settlement granted by TVA earlier in March.

At present there is some $3 million of public construction on which bids are to be submitted, but it is unlikely that any contractor will venture a bid during the uncertain period of wage demands.

It is estimated by Mr. Willard that if the union wage demands are met labor cost will be upped at least 5%.

• **Buffalo, N. Y.**—Buffalo's construction industry cheered by the lifting of federal restrictions on nondefense building projects, relaxed with a virtual assurance that there will be no wage strikes by building-trade unions when current contracts expire May 1.

It was learned that most of the unions have agreed to extend for two years the union-industry "labor peace wage-formula" first accepted in 1950.

Industry and union sources refused direct comment on acceptance of the formula extension. But, it was indicated, the formula, which is tied to the cost-of-living, has been revised.

For the first time, it was reported, the formula will take into account any cost-of-living decreases as well as increases.

Only two of the so-called "basic" building-trade unions have not accepted the extension.

California unions present individual wage demands

The six major building trades unions in southern California, which in the past have negotiated as a unit with industry representatives, this year have filed four separate sets of demands, asking wages increases as high as 50¢ an hour.

Carpenters, iron workers, and operating engineers have filed individual demands; laborers, teamsters and cement masons are proceeding jointly. Agreements covering the 12 southern counties of California will be negotiated with representatives of the Southern California Chapter of Associated General Contractors, the San Diego Chapter of Associated General Contractors and the Building Contractors Assn.

The master agreement now in effect was negotiated in 1950 to run to 1954, with provision that terms may be re-opened this year and next for negotiation on hourly wage rates.

Industry spokesmen in preliminary exchanges have rejected portions of the unions' demands on the grounds that they are not directly concerned with wages. Rejected portions include such items as health and welfare plans, travel time and subsistence, and vacations with pay.

Highest wage increase asked was 50¢ an hour by the iron workers. Carpenters are asking 40¢ an hour; laborers, teamsters and cement masons are jointly are asking 25¢. Operating engineers specified no figure, asked for maximum wage increase permissible under the Wage Stabilization Board formula. All of them asked 7½¢ an hour increase for foremen.

Answers to tax handling of benefit and welfare funds permitted under recent WSB ruling

This is the situation on internal revenue and welfare plans:

1. Premiums paid by an employer on life insurance for an individual employee are taxable income for the employee.

2. Group life insurance premiums paid by an employer are not taxable income for the employee, except where the insurance carries a cash surrender or loan value.

3. Blue Cross premiums paid by an employer are not taxable income for the employee.

4. Money paid under an accident or health insurance policy is not taxable income for the employee.

5. Contributions paid by an employer into a trust fund for group insurance, vacation benefits or health plan are not wages subject to income tax withholding.

6. Money actually distributed to an employee from such a trust fund is taxable income for the employee.

No answer, yet, on whether the cost of health benefits, as distinguished from money, received by an employee from a company-paid welfare plan or a trust fund, are taxable income for the employee. Bureau of Internal Revenue has this question under consideration. It may ask Congress to clarify the situation. Some problems involved—how to figure the cost of the benefits, like those received by mine workers under the UMW welfare plan; how to figure the cost to be counted as taxable income when an employee pays for part of the cost through joint employee-employer contributions to a fund or plan.

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Willow Springs, Ill. (Jet Engine Plant Expansion)	16,000 ft.
Morrisville, Pa. (New Steel Defense Plant)	300,000 ft.
Tucson, Ariz. (Air Force Base)	440,000 ft.
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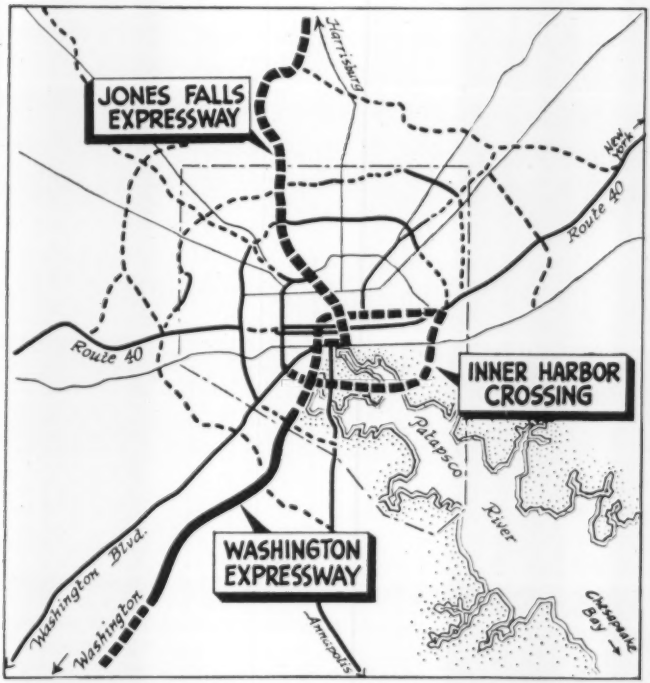

GENERAL MAP OF THE BALTIMORE AREA shows how the Washington and Jones Falls expressways and the harbor crossing tie in with the rings and radials of the general plan. The solid lines show existing portions of the general plan and the broken lines indicate major construction projects under consideration.

Baltimore highway program to spend $214 million

Baltimore has embarked on a $214-million highway construction plan calling for a system of expressways, rings and radials and a tunnel under its busy harbor.

The plan provides for construction of two major projects in the next few years. These are (1) the 6.5-mi $43-million harbor crossing route including the tunnel and (2) the 6-mi $23-million Jones Falls expressway bisecting the city.

The planning commission thinks that the entire highway system can be completed in 20 years with no increase in city taxes and almost altogether on a pay-as-you-go basis.

The completed system will contain:

1. Three outer rings, or partial rings, which will connect with a half dozen radials or spokes in the giant wheel-pattern.

2. An inner ring encircling the business center.

3. New bridges, extensions and improvements to existing streets.

• **Radials**—Radials will extend from the downtown area to outlying sections and to major interstate highways. Four of these radials will start from the inner ring around the business section.

These radials are: The expressway to Washington; the west radial (U. S. Route 40); the Jones Fall expressway leading northward to connect with a planned super route to Harrisburg, Pa.; and the east radial which will be the route to Philadelphia and N. Y.

• **Baltimore-Washington expressway**—Baltimore-Washington expressway (ENR Dec. 20, 1945 p. 841) also serves Baltimore's new $15 million Friendship International Airport. This expressway has been planned since before World War II and is being aided by federal funds.

So far the road extends nearly halfway to Washington and much preliminary work has been done on the southern half. On the north end the highway has been extended almost a mile into Baltimore and work is now under way on a 1,700-ft viaduct to carry the route over the Baltimore and Ohio's main line and nearer to the business section. This construction is taking place on Russell Street, an old street which is being made over into a wide boulevard. Russell will be extended north through a former slum area to connect with two principal downtown streets, Paca and Greene.

The extension is to take place this summer. At the same time Paca and Greene, both wide streets, will be converted to one-way traffic and both will be resurfaced. These two streets intersect the main east-west one way streets (Franklin and Mulberry) which have been carrying traffic to and from New York City for some years.

Recently the House Public Works Committee approved of an additional $1.5 million for the Baltimore-Washington expressway. If it is approved by Congress it will bring the total authorized for the project to $14.5 million—the estimated cost of completing the federal section of the expressway.

• **Jones Falls highway**—Sometime next year the city expects to break ground for the Jones Falls six-lane highway which takes its name from the small creek it follows from the north city line to the harbor some six mi south. The downtown sections will be built first. The road will run alongside the Pennsylvania railway station and will have direct connections to the B. & O. Mount Royal station and also with several principal cross streets through a system of interchanges.

Depressing the expressway will make it unnecessary to disturb certain cross streets in the downtown section. More than half of the proposed route is through city-owned park land.

Fast bus service over the highway has been planned. Pull-off stations are spotted along the highway so that buses will not hold up traffic in loading and unloading.

Automobile traffic will move at speeds of 45 mph. Besides being a quick route for north Baltimoreans to and from downtown, the highway is designed to connect with fast routes

(Continued on next page)

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• **Inner harbor crossing**—Next in priority to the Jones Falls route is the inner harbor crossing. Here again a dual local and through traffic purpose will be served. Beginning on the west the harbor crossing will lead eastward from the Washington expressway, tunnel under the 39 ft channel off historic Fort McHenry and then curve northward to join the road to Philadelphia-New York. The entire business district is by-passed by a limited-access road.

Just recently the city authorized the start of detailed engineering planning on the crossing route. The tunnel will cost $31 million and the approaches, $12 million.

Tolls will pay for the tunnel. Initially the state will put up the $31 million. It has been decided that the harbor crossing project will not be started until at least a year after the huge Chesapeake Bay bridge is completed. At present it is estimated that the bridge will be opened about September 1.

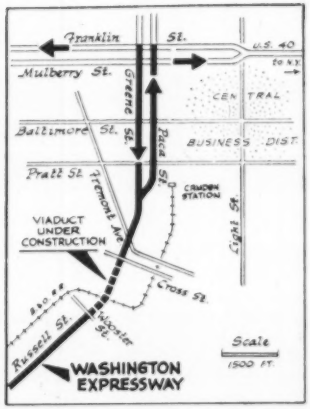
• **Inner ring and future radials**—Portions of the ring and radial streets already exist. In the general plan these streets will be extended and improved. Pratt Street on the waterfront will be the south side of the inner ring and Washington Expressway and Jones Falls route will be the west and east sides respectively. So far the route on the north side has not been determined exactly but it will connect with both the east and west radials which are to be built in the future.

The west radial, to cost about $19 million, will replace two one-way streets, Franklin and Mulberry, which carry Route 40 traffic. These streets are only a block apart, and the long-range plan is to raze the buildings between the two streets to make way for a new expressway extending halfway to the west city limits. The bottleneck route through east Baltimore to New York will be replaced by the east radial.

• **Finances**—The Planning Commission estimated its entire program will cost $194 million. Then it added on $20 million for "unpredictable" increases. Of the $214 million total, the city would pay $142 million. Federal aid is estimated at $31 million, state aid at another $31 million of which $10 million has already been allocated.

Borrowing for the entire 214 million program is at present limited to $14 million in loans already approved by the State Legislature.

With funds from three sources the



MAP SHOWING SOUTH CONNECTION of Washington expressway with the general Baltimore system.

Planning Commission says the city can pay the $142-million construction bill, retire outstanding bonds, continue the resurfacing program and meet regular highway budget expenses. These sources are: (1) Baltimore's 30% take of the state tax on gasoline and motor vehicles; (2) $500,000 to be contributed annually from the total raised by the general city tax; and (3) the $14 million in loans now outstanding.

Annual expenditures for highway construction would vary from $4.8 million up to $8.4 million according to the planning commission schedule.

• **Parking**—Baltimore's planners recognize that making it easier for automobiles to enter the city adds to the parking problem. The Off-Street Parking Commission has been responsible for 13 garages containing 2,483 spaces being built in the last three years.

A fourteenth garage, the tallest of the program to date, is now in the early construction stages. This will be a seven level structure for 357 cars.

Three additional garages, with a total of 574 new spaces are now in the late planning stages but have not yet been authorized by the Off-Street Parking Commission.

Under Baltimore's city-financed program, the city puts up 75 to 85% of the money needed to purchase sites and construct garages. Private concerns operate the garage and repay the city with interest over a period of about 20 years.

George E. Finck, acting director of the Off-Street Parking Commission said recently that the downtown parking demands should be met "within reason" by the time the $10-million loan fund for the city-financed program is exhausted.

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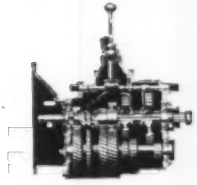

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GETTING OUT THE VOTE in favor of sewerage bonds is a difficult job in the best of times. These days an organized campaign is necessary.

Getting out vote for revenue bonds gets $11 million for needed sewerage

Nashville, Tenn., voters overwhelmingly have approved the issuance of $11 million in revenue bonds to build a sewage disposal plant and interceptor sewer system.

The vote was 8,755 to 1,411 in the heaviest referendum balloting in history.

Warren A. Coolidge, director of public works said the date for receiving bids on the project has not been scheduled, pending completion of arrangements for sale of the bonds and the acquisition of rights-of-way. It is hoped to begin work this fall and complete the job in about two years.

The bonds will be retired with the income from a 50% increase in water rates.

• **Getting out the vote**—One of the most active campaigns ever waged here in behalf of a bond issue preceded the March 20 referendum.

Both daily newspapers called for approval of the bonds and for weeks devoted a great amount of space to articles, editorials and cartoons concerned with the problem.

The Nashville Chamber of Commerce organized a "Committee of 100" consisting of 100 major civic, business, professional, and labor organizations to work for the favorable vote.

Organized opposition to the bonds was virtually non-existent although some groups traditionally hostile to public debt opposed the issue, along with certain residents in the metropolitan community who live outside the city limits.

The argument of this latter group was that they would be compelled to help pay for the plant through the water rate increase, but would not benefit from it since they are not served with sewers.

• **Bad waste, flow conditions**—Engineering studies have shown that the total volume of industrial wastes being poured into the Cumberland average 8.8 mgd. This volume is equivalent to a population of 176,622 persons on the basis of the suspended solids content and to a population of 192,039 people on the basis of the BOD of the wastes.

Untreated domestic and commercial wastes dumped into the river daily has a 120,000 population equivalent.

A study of stream flow records on the Cumberland have shown that the average monthly flows in the river at Nashville vary from about 8,000 cfs in summer and autumn to about 30,000 cfs in the winter and spring. The maximum discharge on record since 1887 was 203,000 cfs.

Corps of Engineer plans for new dams on the Cumberland envisage an increase in the minimum flow at Nashville to about 8,000 cfs except for possible short periods of one or two days.

• **Primary treatment now**—Based on these plans, it has been recommended that only a primary treatment plant be constructed at this time—but so constructed that secondary treatment facilities could be added at any time in the future.

The plant is designed for primary treatment of sewage flow of 46 mgd, with a maximum flow of 138 mgd, and minimum flow of 15 mgd. These facilities should provide disposal for a population equivalent of 335,000.

The main intercepting sewer tunnel will arrive at the treatment plant site at an elevation of about 340 ft. In order to provide gravity flow through the plant, which will be set above present maximum flood elevation, it will be necessary to pump the sewage to about El. 420. For this purpose, multiple sewage-type electric driven pumps will be provided with ample standby capacity. A plant by-pass, which will function automatically in an emergency, will also be provided at the pumping station.

Three parallel comminutors, each mechanically operated, will be provided for screening the average sewage flow. One mechanically cleaned bar screen will be used to handle storm flows.

For removing sand and grit from the sewage, two grit removal tanks of 133 mgd capacity will be provided. Each tank will be 40 ft square with inlet and outlet channel designed to keep head losses at a minimum and will be equipped with electrically driven cleaning and grit washing devices. The grit will be transported by trucks for disposal as land fill.

Two venturi flume type sewage meters will be provided with a range of 15 to 150 mgd and be equipped with remote control indicating recording and totalizing instruments.

Mechanically cleaned clarifiers will be designed to provide a minimum sedimentation period of 2 hours for 40 mgd of sewage. Using four units originally, the plant could be expanded to accommodate the ultimate 1985 average flow by adding one unit when required. These tanks should remove 60% of the suspended solids from the sewage at average flow.

Primary sludge digestion tanks will be designed to provide a 50-day digestion period. Four tanks, each 100-ft in dia and 20 ft deep, will meet this requirement, being equivalent to 2.08 cu ft per capita.

The tanks will be heated and covered to permit collection of the digester gas. In addition to the four primary digesters, there will be one secondary digester to act as a decanting and sludge storage tank. This tank will be 100 ft in dia and 20 ft deep, with a floating cover. It is estimated that the gas production from the five digesters at the average

design sewage flow will be 260,000 cu ft per day.

The chlorine handling facilities to be used for sterilizing the treated sewage will consist of two vacuum type chlorinators.

All buildings will be permanent, fireproof, masonry construction, arranged for convenient operation, and with interior construction which will permit them to be easily cleaned.

• **Interceptors**—The interceptor system will eliminate 26 outfalls now discharging directly into the Cumberland River. The East Nashville interceptor, varying in size from 36 in to 54 in in dia, will parallel the river for about 25,000 ft then cross the river to the main interceptor through an 820 ft inverted siphon. The West Bank interceptor will parallel the river for 13,600 ft to junction with the river crossing from the east bank. The main interceptor, a tunnel section 7 ft 6 in by 8 ft 4 in, will in general follow the route of Jefferson St. and Centennial Boulevard for a distance of 30,500 ft to the treatment plant, located near the mouth of Richland Creek, downriver from the extreme northwest section of Nashville. All flow in interceptors is by gravity to the pumping station at the plant.

• **Financing**—Here's the financing picture:

City officials propose to pay for the plant and its operation with a 50% increase in water rates to all consumers.

They would retire the bonds in 40 years.

During this period they would take in about $32,918,495 from the increased water rates. Principal and interest on the bonds would amount to $17,459,200, the operating cost for 40 years would be $4,970,500, renewals and replacements for 40 years would cost $4,125,000, making a total cost for the plant for 40 years, $26,554,700.

This leaves a surplus of about $6 million for sewer extensions, and other contingencies.

Within the metropolitan area, however, thousands of homes will remain for the present without adequate sanitary facilities. Some 15,780 persons inside the city use open pit privies, and about 90,000 persons outside the city limits use septic tanks.

City council recently authorized issuance of $500,000 in general obligation bonds to extend sewers to unsewered areas inside the city limits. Specific proposals for the expenditure of this money have not yet been advanced.

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This installation is typical of Layne's all inclusive services. Everything from the original test borings to the well drilling, sand screen and pumps and motors, was handled complete by Layne's own crews operating under the direct supervision of Layne engineers. It is such splendid services and outstanding results that Layne and Layne alone in the Nation is in a position to offer cities, factories, mills and plants of all kinds whether the need is for a single-unit or for many. For late catalogs, bulletins etc., address

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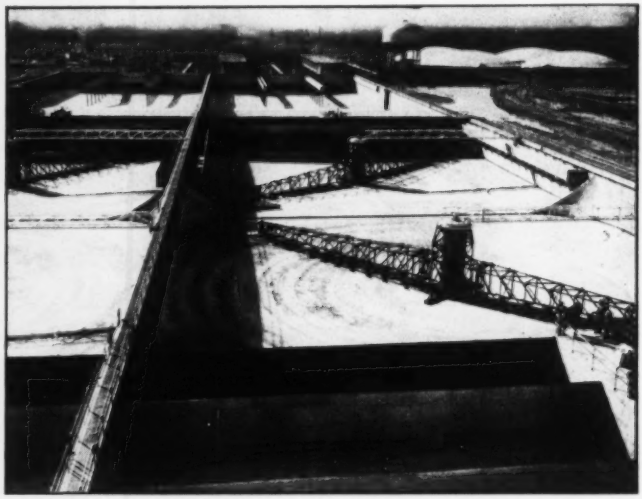
WATER TREATMENT

Municipal . . .



ELM FORK WATER WORKS at Carrollton, Tex., taken before the plant's settling basins were filled to begin sending water to Dallas. (Dallas News photo)

Dallas water works begins operations

The new $7-million Elm Fork water works at Carrollton, near Dallas, Tex., is going into operation. The plant is expected to take care of Dallas water needs for many years.

The first run of the new works was delayed for about a week due to last minute repairs of leaks, according to L. C. Billings, water purification supervisor.

Water from the Elm Fork works will run through a 66-in main to the city's 105 mgd pumping station near Bachman Lake on the northwest fringe of the city. From there it will be sent into the city's regular water system.

Dallas Water Superintendent Karl Hoefle said the average daily run from the Carrollton plant would be about 18 mgd to 20 mgd even though the works present facilities could provide about 75 mgd.

• **Plant capacity not used**—The low usage made of the plant capacity is caused by inadequacies in the network of mains and reservoirs in Dallas proper. At most, the city's system could take 30 mgd from Carrollton.

City water officials had hoped to patch these gaps through a new bond issue early this year, but the bond issue was defeated by Dallas voters. Even if the voters reverse their stand later this spring, improvements could not be completed in time for peak summer water demands, said Hoefle.

He said Dallas' water supply would be adequate this summer if the weather is not too severe. Last year, the city had to clamp on water rationing and buy water from the nearby Highland Park water department.

On peak days in 1951, Dallas consumed 112 mgd of which 6 mgd had to be furnished by outside source.

• **New capacities**—On peak days the new works will boost the city's pumping capacity to 135 mgd. In addition the new works provide storage space for 14 mg raising the city's storage capacity to 67.5 mg.

Dallas started construction of the Elm Fork works in June 1950. The installation includes a pumping station, a chemical building, four large settling basins, a series of filter beds and four storage structures.

Untreated water is taken from Lake Dallas to the Carrollton Dam on the Elm fork of Trinity River, thence along a half mi conduit to the works.

• **Future expansion plans**—Extensive plans have been made for future expansion of the project.

In the pumping station, for instance, hidden foundations have been put in for four more 1,750 hp units. And steel reinforcing rods have been covered with a rust-resistant coating and extended thirty in beyond the north side of the building. This will make boring into the present north

(Continued on page 54)

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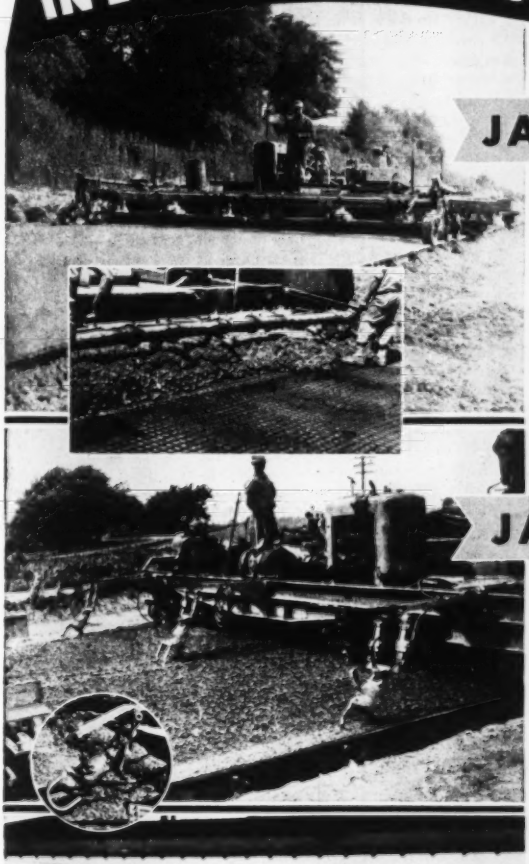
HIGHWAY and AIRPORT



JACKSON VIBRATORY PAVING TUBE

The JACKSON Paving Tube, which is quickly attached to any standard finisher, provides full width internal vibration through full depth of the slab. The harsher mixes are readily made plastic. Important savings in cement can be made, or important gains in compressive strength and durability achieved when no cement reduction is made. Spreading costs are reduced, finishing progress is much more rapid, complete compaction is accomplished and concrete is perfectly puddled at sideforms and joints. It is adaptable to slabs 6" to 24" thick and quickly adjustable from 10' to 25' widths, in the field. May also be attached to standard spreaders for vibrating the first course in thick slab construction. Write for complete details.

JACKSON SIDE FORM VIBRATOR

Eliminates manual vibrating of concrete at side forms. Saves the better part of two men's labor. Mounts on any modern finisher, Jackson Vibratory Paving Tube or Spreader. Employs two or more vibratory units which are simultaneously lowered into or raised from the concrete by the finisher operator. Units operate close to forms or reinforcement, ride over any obstruction without fouling. Will not penetrate into sub-base. Assures thorough compaction regardless of speed of finisher, no spots missed. Long-wearing, trouble-free. Write for complete facts.

MUNICIPAL PAVING - BRIDGE DECKS HIGHWAY WIDENING and PATCHING, etc.

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Strikes off to any crown, undercuts at curb or sideform, works right up to and around manholes and other obstructions. With it center joints may be eliminated and full widths (up to 30') poured. Requires only two men on widest slab, due to strong tendency to propel itself. It's the only screed that can be rolled back on 4 rollers for second pass. Contractor has only to secure plank cut to proper length and crown to be set for any job. Powered by Jackson 1.25 KVA Portable Power Plant. Most productive, most versatile of all screeds. Write for details.

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QUICKLY
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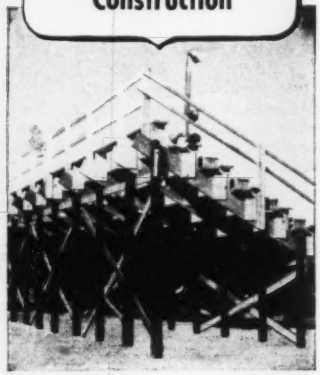
with Pole-Type
Construction



Bleachers supported by Koppers Pressure-Creosoted Poles.

LAST FALL, the high school in Yuma, Colorado, needed more seats for spectators—needed them in a hurry. *Within a few days*, the 90-foot bleachers shown here were built by the local Lions Club.

No Foundations Required

The pole-type method of construction, used in building these bleachers, speeds up and simplifies the erection of many different kinds of structures, from newsprint warehouses to barns. No foundations are required . . . structures are carried by poles that go deeply enough into the ground to provide solid support and strength. Costs can be cut almost in half, yet the completed structures can be just as permanent and practical as the more expensive, conventional type.

Poles Are Important

With this kind of construction work, the *quality* of the poles is important. Koppers Poles are made from sound, strong wood. Pressure-treatment with creosote is deep and thorough, protecting poles against rot and termites. Koppers Poles give decades of good service, making them extremely economical. They require no painting and never rust.

If you have a question about pole-type construction please write to Wood Preserving Division, Koppers Company, Inc., Pittsburgh 19, Pa.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

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PRESSURE-TREATED
WOOD

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Municipal . . .

walls unnecessary if another pumping station must be built in the future.

At present, twelve filter beds are in operation, but this number could be doubled with little trouble. The twelve additional beds already have been built. In addition, the present pair of settling basins have been so built that a third can be added to the filter beds that already have been completed. The 5-story chemical building was designed to meet all needs, present and in the near-future.

• **Insuring more water supply**—A tentative agreement was reached between Dallas and the Army Engineer Corps on terms of a water supply contract.

Dallas is to receive its municipal supply of water from the Grapevine and Garza-Little Elm Dam reservoirs. The two dams are now under construction by the Army Engineers Corps principally for flood control. Grapevine Dam is nearly finished and Garza-Little Elm Dam is scheduled for completion in 1954.

The city will receive a supply of 525,000 acre-ft yearly for $5.5 million. This is four times the amount of water now drawn from Lake Dallas.

In addition to the cash payment, the city will turn Lake Dallas over to the Garza-Little Elm project with the understanding that Lake Dallas will be returned to Dallas if the government ever gives up the Garza-Little Elm reservoir as a flood control project. Dallas also retained mineral rights to the property.

The city has already made a part payment of $1.8 million to the federal government for the new water supply. A bond referendum will be held in May to give the voters a chance to vote on $3.7 million in water bonds to raise the rest of the payment.

• **Another Texas city faces problem**—San Antonio's city council has passed a comprehensive ordinance governing the conservation of water.

It limits the use of water for sprinkling purposes to every other week day and Sunday during the months of June, July, August and September, and sets out conditions that must be met in the use of water in swimming pools, refrigeration and air conditioning units.

C. A. Goeth, chairman of the City Water Board, declared, "Our water table has never been so low as it is now. We're going into another summer with the greatest drought I've seen in my lifetime."

The ordinance provides a fine of $10 to $200 for each violation.

Second Colorado aqueduct to be let for contract

Congress has appropriated $18 million for construction of the second barrel to the San Diego, Cal., aqueducts. And voters in the San Diego County Water Authority approved a Water Authority-Navy repayment contract by a 40 to 1 margin at a special election late in February. Plans and specifications will be ready for advertising sometime in May.

The 72-mi line will parallel the present aqueduct, which has an 85 cfs rated capacity. The second barrel will have a designed capacity of 80 cfs for half of its length, and 95 cfs for the remaining half. The 15 cfs added capacity was given the upper half of the barrel after negotiations with the Metropolitan Water District which indicated it wanted the capacity for development of new agricultural lands.

The aqueduct which carries Colorado River Water from storage at Parker and Hoover Dams, is the principal source of domestic and irrigation water in San Diego County. A dought cycle during the past 10 years has emptied most reservoirs, in the area. Heavy rains in late 1951 and thus far in 1952 have improved water storage to the extent that may result in averting outright water rationing.

Cities plan garages to be privately built

Pittsburgh's new 1,000-car underground garage will be designed, financed, constructed and operated by Morrison-Knudsen Co., of Boise, Idaho, the Public Parking Authority disclosed recently in Pittsburgh.

The authority said it decided against advertising for bids for the estimated $4-million project when the attractive M-K offer was made. State law permits the authority to operate or lease its garages. If leased, the authority may legally enter the agreement "with or without competitive bidding."

• **Terms**—The authority will get a small percentage of the income from parking fees and the builder-operator will keep the remainder.

The authority will have the right to approve or reject the garage designs. And the city will have the right to approve or reject designs for the park.

The authority will have the power to approve or reject lease terms to be submitted by the firm. The authority will control the rates.

The lease will expire upon the liquidation of the bonded indebtedness. Upon expiration the garage will become property of the city.

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P&H MAGNETORQUE*

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We'll make this promise: You'll never have to "baby" this machine, even in the heaviest going! It's *built* for it — all-welded of alloy steels throughout, the toughest construction known. *It means steady digging.*
But the big pay-off in extra production comes with Magnetorque electric swing — enough faster to deliver 5 cycles to 4 on other machines in the 2½ yd. class. And the "time-outs" for adjustment and replacement of swing friction linings can now be salvaged for increased yardage. Magnetorque lasts the life of the machine.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

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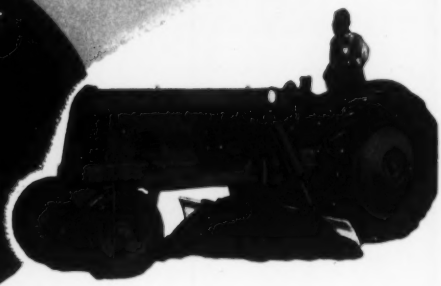
Some of the Jobs HUBER MAINTAINERS Are Doing



NATIONAL GOVERNMENTS

Grading and maintenance work on highways and secondary roads in national parks, reservations, national public lands.

STATES

Highway grading and maintenance service of many kinds including berm grading, mowing, ditch cleaning, etc.

COUNTIES

Highway and secondary road grading and maintenance work. Counties owning attachments keep HUBERS busy every month of the year.

MUNICIPALITIES

Street and alley grading and maintenance; every type of maintainer attachment is in municipal service.

TOWNSHIPS

Townships charged with road maintenance are among favorite users of Huber Maintainers for grader and maintenance work.

PUBLIC GROUNDS

Parks, playgrounds, conservation areas, publicly-owned beach areas need and use HUBERS for grader and maintenance service.

OIL FIELDS

HUBERS are at work in the oil fields, grading and maintaining off-the-highway roads and building dams around oil wells and storage tanks.

CEMETERIES

Cemeteries keep HUBERS busy every month, grading and maintaining drives, mowing, developing new grounds, removing snow, patching pavements, etc.

AIRPORTS

HUBERS are tailor-made for airport service, grading unpaved areas, patching paved areas, mowing, removing snow, towing planes, etc.

LOGGING

Grading and maintaining logging camp roads, mowing, bulldozer service.

INDUSTRIES

Many industrial users include factories with sizeable grounds and miles of roadways; lift loader widely used for cleanup work around factory sites.

MINES

Grading and maintenance of roadways; broom widely used around strip mines to sweep coal veins before removal.

ESTATES & RANCHES

Grading and maintenance of roadways; lift loader for cleanup; mower widely used.

RACE TRACKS

Grading and maintenance of track and of surrounding roadways and grounds.

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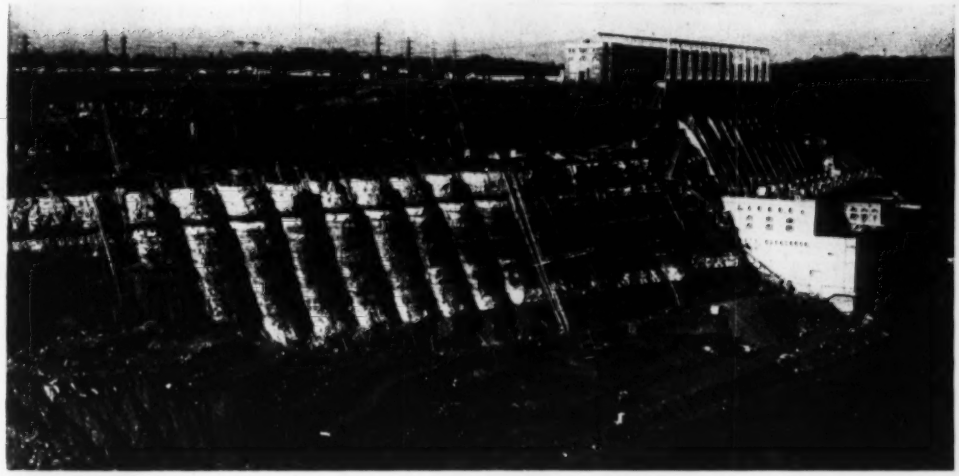


POWERHOUSE SITE—Taken from across the river, this construction view shows the powerhouse site of the new $182-million Sir Adam Beck-Niagara Generating Station No. 2, the largest power development ever undertaken by Ontario Hydro. On the face of the 300-ft cliff, trenches for the penstocks are being carved from solid rock. When completed by 1955, the new generating station will be able to produce a capacity of 525,000 kw (700,000 hp) in 7 units. Seen to the right in the picture, is the world renowned Sir Adam Beck-Niagara G.S. No. 1 (formerly the Queenston-Chippawa plant).

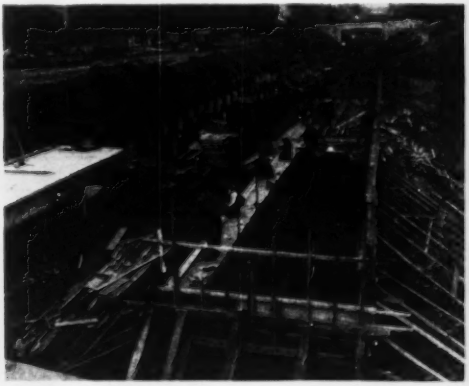
Canada throbs under construction boom

By James Montagnes
Staff Correspondent

Ever since 1945 Canada's construction industry has been booming. Over $7 billion has been spent in the industry in that time, with every year a record year. Last year saw Canada's construction industry busy with all types of building totaling $2.3 billion, and this year expectations are that close to $3 billion will be reached. Every type of building has been going ahead, and only in the last year has there been a leveling off in commercial construction and a slight falling off in residential building due to material shortages and new government credit restrictions.

(Continued on next page)

A DIVERSION of the Nehako River in northern British Columbia, part of the hydro-electric power development for the Aluminum Co. of Canada, new refinery at Kitimat, B. C. Photo shows tunnel to divert river to 100 mile long lake.



TORONTO SUBWAY—One of the open cut stations on Toronto's rapid transit subway, the first in Canada, taking shape. Sides have to be poured and concrete base has to be poured on this section of the subway. It will be ready for use early in 1954.

ONE OPERATOR... can DIG... HAUL... DUMP...

MORE YARDS with a

SAUERMAN *Long Range* MACHINE

Picture above shows how a 2 cu. yd. Sauerman Power Scraper with a 500 ft. operating span is used by the Nevada Silica Sands, Inc., to mine sandstone. Because the material will not cave, the digging path of the scraper must be changed frequently, so the tail end is arranged for automatic rapid shifting. A third drum on the 75 h.p. Sauerman scraper hoist controls the shifting.

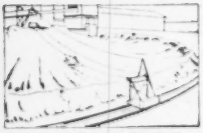
A smaller Sauerman scraper is used at the company's processing plant to reclaim sand from storage and load into cars.

"The best bet for big output and low upkeep on any dig-and-haul job," say users all over the world "and Sauerman machines are simpler to operate, too."

Yes, Sauerman machines offer speedy, dependable action controlled by a single operator . . . move large yardages from any point within their cable radii. Sauerman machines will reach across a river, deep down into a pit, up to the top of a hill or across a wide stockpile—and handle a heaping load every time. Digging, hauling and dumping are accomplished in one continuous rapid cycle.

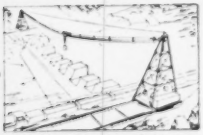
Other desirable features of Sauerman Slackline Cableways and Power Drag Scrapers: First cost is surprisingly low . . . maintenance is negligible . . . power demand is moderate . . . flexibility of the machines means they can be extended readily and thus adapted to suit every particular requirement.

Sauerman Scraper Excavator



Sauerman Scraper Stockpiler

Sauerman Slackline Cableway



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International . . .

There is no one area of Canada which is not being touched by the construction boom. From Atlantic to Pacific, and from the international border to the Arctic regions building is going ahead, with defense industries and government defense projects now accounting for a bigger slice of the total contracts. The building boom covers almost every type of industry in Canada, but especially base metal mining projects, oil development, pulp and paper industries, heavy industry and a rapidly expanding chemical field.

The last year has seen a deferment of commercial and residential construction, due in part to steel and related shortages. Steel priorities from Ottawa go to defense projects and defense industries, and the bulk of Canada's steel comes from the United States, with some orders having been placed in Great Britain and western Europe. Canada's steel industry is expanding its capacity by a third, but the full benefit of this expansion will not be felt till 1953. There are some shortages also in other metals such as aluminum and copper, but lumber, cement, glass, concrete and other building materials are expected to be ample for the 1952 building boom.

To list all multi-million dollar construction projects in Canada would take too much space. They include such diverse items as oil pipelines in both western and eastern Canada, a television micro-wave relay network between Buffalo and Montreal, a $7-million harbor bridge at Halifax, oil refineries in southern Ontario and in western Canada, a $50-million petrochemical plant at Edmonton, the largest single factory in Canada covering 32½ acres under one roof near Toronto, expansion of numerous pulp and paper plants and base metal mines throughout Canada, a number of hydro-electric power plants in all parts of the dominion, several large railway developments to new base metal mines in uninhabited nothern regions, and a highway construction project across Canada to complete Canada's first all-paved highway from the Atlantic to the Pacific. In addition, everywhere across Canada there are new private housing developments as well as those being built by the government's Central Mortgage & Housing Corporation to supply in part the need for homes for defense workers.

• **The St. Lawrence Seaway**—Some time before the end of 1952 Canadians hope to see a start made on the all-Canadian St. Lawrence Sea-

way and the accompanying power development in southern Ontario. Engineers are busy with final plans, and construction crews are being readied for the big undertaking.

The biggest single job in Canada is the building of a new aluminum refinery at Kitimat, in northern British Columbia, 400 miles north of Vancouver by the Aluminum Co. of Canada. Total cost of this project is given at $500 million, though the initial stage now in building is to cost about $180 million. First aluminum is to be poured in 1954 at what is now an isolated former Indian village. The project includes a 1,600,000-hp hydro-electric power project with ten-mi tunnels drilled through a mountain range and a 50-mi transmission line crossing a 5,000-ft range to the aluminum smelter. It also involves building a townsite for 50,000 people at the refinery, and wharves and docking facilities for ocean freighters which will bring raw materials to the refinery.

At the other end of Canada, a 360-mi railway is being built by the Iron Ore Co. of Canada north of the St. Lawrence River into uninhabited Labrador to bring out an annual 10 to 20 million tons of iron ore early in 1954. Again, this is through entirely new country with few inhabitants, and requires vast ore docks as well as development of a mining town and equipment to take out the ore.

• **Railroad building**—Another railway is being built in northern Manitoba to reach a new nickel area where a new mine is being developed, and at other spots across Canada other railway lines are going into new mining and lumbering projects.

In southern Ontario a $182-million hydro-electric power development is being built as rapidly as possible to raise power capacity by 700,000 horsepower for heavily industrialized southern Ontario. The Ontario Hydro-Electric Power Commission is building this new power site at Niagara Falls alongside its present 525,000-hp station there. The project includes 5½ mi of 45-ft tunnel being built under the city and a two-mile open canal to carry the water from the tunnels to the new power station being blasted out of the rock face of the Niagara River shore. First power from the new station will flow in 1955.

• **Toronto's subway**—At Toronto the $45-million rapid-transit subway, Canada's first, is being rushed to completion by the Toronto Transportation Commission for service early in 1954.

(Continued on page 61)

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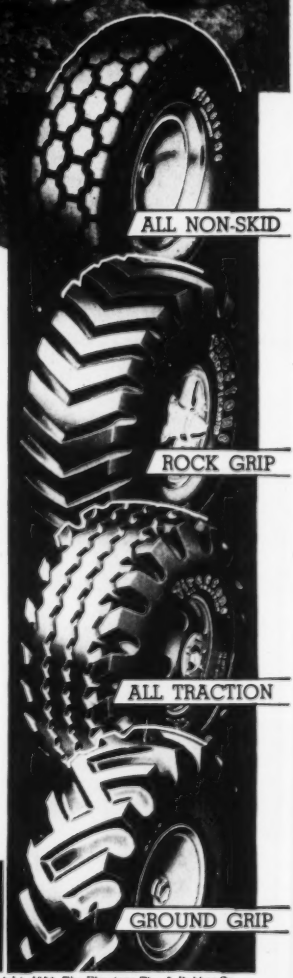

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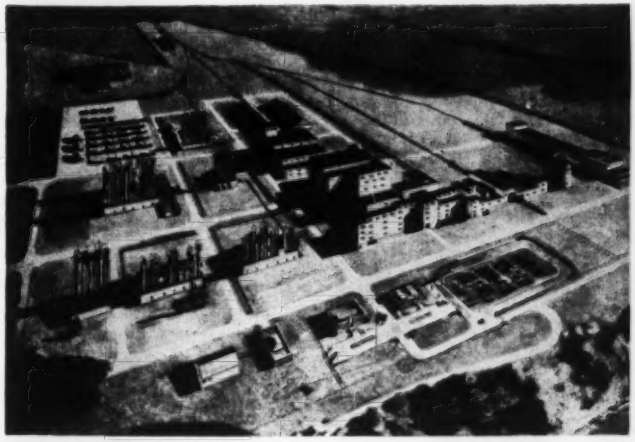

PETRO-CHEMICAL PLANT—The $50-million dollar petro-chemical plant now being built by Canadian Chemical Co., at Edmonton, and to be ready by end of 1952. This is a subsidiary of Celanese Corp. of America.

Work on this project is on schedule and most of the underground sections will soon be ready for tracklaying, while first downtown stations are now being finished. Work on the northern end, mostly open-cut has been going ahead all winter, and first open-cut stations are now taking shape, while switchyards are being built.

Highway construction has not progressed as rapidly in Canada as some defense industries and military personnel would like, mainly due to steel shortages for bridges and overpasses. About $300 million was spent last year on Canadian highway construction, including about $58 million on the Trans-Canada paved highway, which is to be completed by 1956 by the eight provinces which have signed agreements with the Canadian federal government. Two provinces, Quebec and Nova Scotia, have not signed agreements as yet. The paved highway will not be superhighway but a good all-weather road from east to west. Various provincial highways are being built, and a major superhighway now nearing completion is from Toronto north to Barrie, 60 miles. This is expected to be ready in part for use this year.

Defense projects under the government's Defense Construction Ltd. are expected during 1952 to total $200 million, about double the 1951 total. They include such varied items as radar stations on Arctic islands, barracks and messes at training bases in Canada, airports across Canada, sewage and water systems at existing and new military bases, explosives storage buildings, a medical research plant outside Toronto, and a number of government munitions and electronics factories. Defense construction is expected to reach its peak in the fall of this year. Steel requirements are about double those of last year and may drop off as the defense construction eases off next year.

Industrial plants for defense industries include aircraft engine plants, A. V. Roe Canada Ltd., Toronto, $7 million; Rolls-Royce Canada Ltd., Montreal, $1.5 million; Canadian Pratt & Whitney Aircraft Co., Montreal, $8 million; Lucas-Rotax Ltd., Toronto, $2.5 million; and a number of other smaller plants. Various internationally-known manufacturers as Canadian Westinghouse, Goodyear Tire & Rubber, Massey-Harris, Ford Motor of Canada, Brown Boveri (Canada), are expanding or building new plants in the multi-million dollar brackets for defense orders, to name but a few.

• **Pulp and paper**—Canada's raw natural resources are being developed, as shown by the fact that the pulp and paper industry is spending about $250 million in new plants including a $65-million project in British Columbia by Celgar Development Co. (subsidiary of Celanese Corp. of America); Alberta Pulp Mills at Red Deer $20 million; Brompton Pulp & Paper at Red Rock, Ont., $15 million; St. John Sulphite Ltd., at Union Point, N. B., $20 million; to name but a few. Base metals development by way of new mines, in addition to the aluminum project at Kitimat, and the iron ore project in Labrador, total close to $75 million. Oil projects and petro-chemical plants now building

(Continued on next page)

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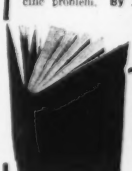

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amount to almost $350 million and include besides refineries and chemical plants several pipelines. The biggest of these is an $82 million pipeline being built across the Rocky Mountains for 700 miles from Edmonton to Vancouver. A number of new cement plants and asbestos mills are now being built throughout Canada.

Last year saw engineering construction at a total of $859 million, followed by commercial building totalling $548 million, industrial building $452 million and residential building $437 million. In the first two months of 1952 construction awards were down 7 percent from those of 1951 and totalled $260 million, with engineering construction contracts at $130 million, followed by $48 million for industrial, $44.5 million for commercial and institutional, and $38.7 million for residential, according to MacLean Building Reports Ltd., Toronto.

Digging tough volcanic rock at 9,000 Ft . . .

On Mexico City—Cuernavaca Freeway

Men and machines are digging through tough volcanic rock in opening a new 4-lane freeway between Mexico City and Cuernavaca—an important segment of the new streamlined highway 285 miles to Acapulco on Mexico's Pacific Coast.

The 50-mile freeway section is expected to cut travel time between the cities in half, as well as to encourage more people in Cuernavaca to commute to the capital city to work. This section will be a 4-lane asphalt-surfaced highway, 70 ft wide, with 7-ft ditches on each side, and will be divided by a median rim built of prefabricated concrete.

While the freeway is entirely a new road, the 235-mile section between Cuernavaca and Acapulco is a reworking of an old road.

Work on the new highway began in May, 1950, and is scheduled for completion May of next year. There were approximately 2,000 men working on the project early this year. The principal contractor is Cia. Constructora Juarez de Mexico, S. A., with 1200 workers and a contract amounting to about $8 million.

The contractor put two new power shovels to work to help dig out the volcanic rock. In some cases these machines threw material over the sides of the mountain and at other times loaded the rock into trucks for use as fill. The location is at an altitude of 9,000 ft.

Key personnel for Cia. Constructora Juarez de Mexico, S.A., on the construction are: Ing. Santos Amaro, general manager; Ing. Antonio Amaro, superintendent; Ing. Juan Pinto, and Ricardo Wilde, superintendent.

AT 9,000 FT ELEVATION—This 93-M diesel shovel with 2¼-yd dipper, tosses a hunk of volcanic rock down the side of a mountain near Topilejo, about 18 miles south of Mexico City—in the construction of the Mexico City-Cuernavaca Freeway.

Big Yellow Machines on Colorado's Model Turnpike

WHEN you drive between Denver and Boulder, Colorado, over the new toll turnpike, you will be impressed by its long, sweeping curves, easy grades and superb surface. You'll appreciate, too, the saving in time and driving effort as well as the 8-mile shortening in distance. Colorado can be justly proud of this superhighway.

Construction of the turnpike was performed by a number of well-known contractors, including Peter Kiewit Sons' Co., J. H. and N. M. Monaghan, Western Contracting Corporation and Colorado Constructors, Inc. With the first contracts let in late 1950, the job has been carried through in good time.

A great part of the earthmoving and grading has been done by "Caterpillar" equipment owned by the various contractors. "Cat" D8, D6 and D4 Tractors, equipped with "Caterpillar" Bulldozers, handled the short-haul work. Over longer distances "Cat" DW20 Tractors, pulling W20 Wagons or No. 20 Scrapers, rolled their big loads fast. Much of the leveling and surface preparation was done by "Caterpillar" No. 12 Motor Graders. And numerous "Caterpillar" Diesel Engines powered shovels and compressors along the route.

As on practically every important highway contract in the nation, the big yellow machines made by "Caterpillar" have contributed to the efficiency and speed of this construction job. Built with the stamina to stand up and take it under the toughest conditions, they keep steadily at work with a minimum of down-time. And when repairs are needed, fast service is always available from "Caterpillar" Dealers.

Good equipment is valuable property in times like these. It's worth taking care of. A few minutes a day spent on proper maintenance pays off in many added hours of profitable work life.

A "Caterpillar" D8 Tractor and 'Dozer, owned by Peter Kiewit Sons' Co., backfills around a bridge on the Denver-Boulder Turnpike. Lorain dragline in background is powered by a "Cat" D318 Engine.

Big loads of fill earth are handled by this "Caterpillar" DW20 Tractor, pulling a W20 Wagon. Owned by Peter Kiewit Sons' Co.

This "Cat" No. 12 Motor Grader, owned by Colorado Constructors, Inc., is finishing a shoulder on the new turnpike, Colorado's only toll road.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

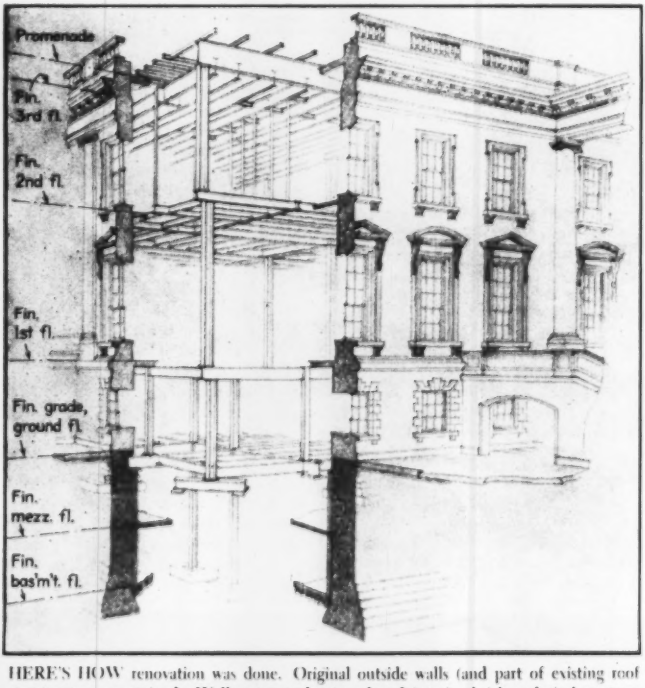
GLEAMING in a new coat of white paint, old walls of the White House again enclose a President and his family. New interior structure makes it a safe place to live. Last month a train of moving vans delivered furnishings, both new and old. (Reni photo)

The President moves into a "new" house

RETURN OF THE PRESIDENT last week to his official home climaxed three years and almost $6 million worth of painstaking construction. The White House looks the same as it did when the Trumans moved across the street. But its ancient walls surround an all-new interior.

Keeping the old walls was a basic requirement for the work because it was desired to retain the mansion's historic integrity as well as its architectural charm.

The walls were in salvagable condition despite the fact that their spread footings rested in a compressible soil stratum. Inside, however, conditions were intolerable. Interior brick walls had no spread footings, so they had settled faster than outer walls. This situation not only had created dangerous conditions in the masonry, but it had set up excessive stresses in floor timbers. The timbers in turn had been weakened by countless holes and notches cut for improvements through the years.

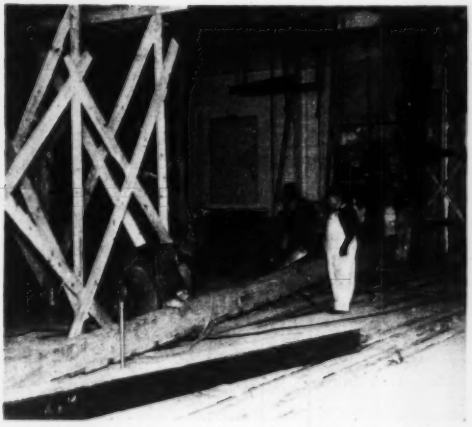


HERE'S HOW renovation was done. Original outside walls (and part of existing roof structure) were retained. Walls were underpinned and interior brick and timber structure was replaced by concrete and steel. (Public Building Service)

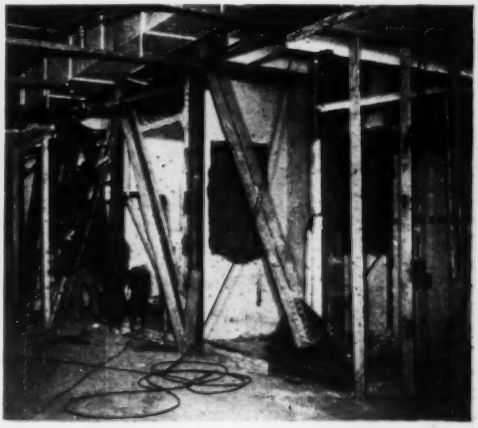
• **Bad shape**—Structurally, the building was in such bad shape that its notorious fire-trap conditions were of secondary importance. This fact came out in a report by W. E. Reynolds, Commissioner of Public Buildings, R. E. Dougherty, and Douglas W. Orr. The latter two men at the time (1948) were presidents of the American Society of Civil Engineers and the American Institute of Architects, respectively.

• **Solution**—The solution was to underpin the old walls 24 ft down to a hard gravel stratum, and to ease their load by transferring the existing roof structure (completed in 1927) to a new steel frame inside the walls. This frame also would carry new floors.

While underpinning progressed, the shell was gutted—old interiors being carefully preserved. Braces and shores supported the roof and the

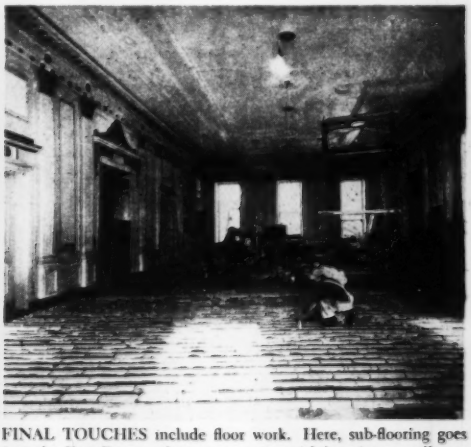


TIMBER BEAM, weakened by notches and holes cut for many alterations, is removed during demolition inside of White House. This and many other timbers dated back to 1815. (Reni photo)



ROOF TRUSS, part of 1927 renovation that added a third floor, is exposed. Part of this structure had to be shored from basement until new steel was erected. (Reni photo)

STEEL AND CONCRETE interior structure contrast with 4-ft brick and stone walls of original White House. Walls now carry only their own weight, the roof resting on columns of the new steel frame. (Wide World photo)



FINAL TOUCHES include floor work. Here, sub-flooring goes into the East Room, where important social functions usually are held. Principal rooms of the White House are faithful replicas of originals. (Wide World photo)

old walls. Then the structural frame went in. Steel erection was a mean job—every piece had to be threaded through windows and among braces. This difficulty, of course, also applied to other heavy-construction operations where contractors normally have elbow room for big mechanical helpers.

For instance, excavation for two new basement levels—10,000 cu yd of it—was handled mostly by front-end loaders and light trucks. Truck access was over earth ramps through the foundation wall. Other earth was pushed by light bulldozers to pits outside the building line, where it was clamshelled to trucks.

In 1949, the job cost was estimated at $5.4-million. Increased construction costs affected the estimate so that in 1951 Congress added $361,000 to the fund.

• **Credits**—The government's representative at the site was Maj. Gen. Glen E. Edgerton, executive director for the Commission on the Renovation of the Executive Mansion.

Commissioners include Sen. Kenneth McKellar, chairman; Mr. Orr, vice-chairman; Sen. Edward Martin; Rep. Louis C. Rabaut; Rep. Frank B. Keefe; and Mr. Dougherty. Lorenzo S. Winslow is architect of the White House and secretary of the commission. The Public Buildings Service, under Mr. Reynolds, is the government agency that handled the construction contracts. Principal consultants for the commission were Ernest E. Howard, Kansas City; Emil H. Praeger, New York, and W. A. Delano, New York.

The general contract was held by John McShain, Inc., of Philadelphia, on a fixed-fee basis (fee: $100,000). The underpinning subcontractor, Spencer, White and Prentis, New York, also worked on a cost-plus-fixed-fee basis, but other subs were lump-sum. McCormick Const. Co., Inc., of Wilmington, Del., erected the steel, which was fabricated by Bethlehem Steel Co.

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Skyscraper sheathed in aluminum

TOWERING 410 ft above Pittsburgh streets, the 30-story Alcoa Building is the lightest office building of its size ever built.

Its low weight is principally due to use of light materials—thin, aluminum-faced exterior walls, light-gage steel floors, foamed-concrete fireproofing of structural members, perlite-plaster fireproofing under floors, and aluminum piping and installed equipment.

Included in the last is an aluminum ceiling backed up with aluminum pipe in which hot or cold water will be circulated for heating the building in winter and cooling it in summer. Air requirements for conditioning the offices are about 50% below that for conventional air conditioning. Alcoa's consulting engineers estimate that an additional 500 tons of steel for sheet-metal work alone would be needed to convert this panel-heating and cooling system to a conventional air-conditioning system.

The low weight of the building is clearly indicated by a comparison of its structural-steel requirements with those of some of its Pittsburgh neighbors of conventional construction. The Alcoa Building, containing 310,000 sq ft of rentable space above the first floor, incorporates only 6,500 tons. In contrast, the Gulf Building, 38 stories high, with 304,000 sq ft of floor area, required 12,700 tons, and the older Oliver Building, 24 stories high, with 317,000 sq ft of rentable area, needed 10,000 tons of structural steel in its frame.

ALCOA BUILDING in Pittsburgh has a newly developed, thin, lightweight exterior wall. The steel framing in the foreground is for a four-story glass-enclosed entrance, which is supported on two cantilevers projecting from the building.

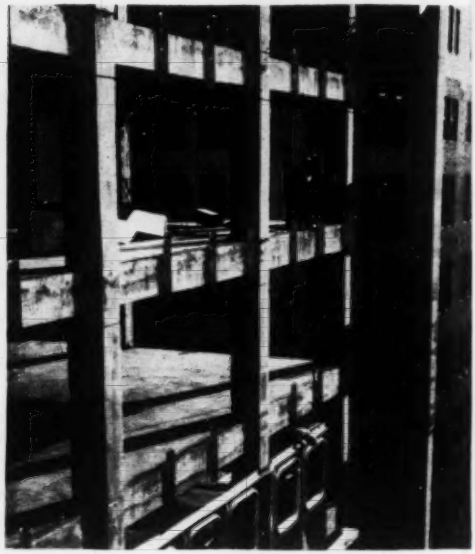
• **Aluminum headquarters**—Designed before the start of the Korean War, when aluminum was plentiful, the Alcoa Building was intended to serve as a demonstration of the many practical and economical applications of aluminum that are possible in building construction. Consequently, extensive use was made of aluminum—in the exterior walls, ceilings, stairs, wiring, piping, air conditioning, windows, lighting fixtures, door frames and hardware. This was an important factor in reducing structural-steel and foundation requirements.

Much of the materials was ordered and fabricated when the Korean War broke out and aluminum became a critical metal. Where feasible, the designers immediately changed to less critical materials. But because some changes would have increased structural-steel requirements and overloaded the foundations, aluminum had to be retained, particularly for the exterior.

Most striking application of aluminum in this structure is in the exterior treatment. The outer facing consists of 6x12-ft, story-high panels made of ¼-in. thick stamped aluminum sheets. Having an integral exterior coating of a 5% silicon-aluminum alloy, the metal was given an electrochemical finish producing a permanent gray color. Each panel contains one window. Story-high panels, 27 in. wide, also were used, to cover exterior building columns.

The new structure will enable the Aluminum Company of America to concentrate its Pittsburgh activities under one roof. Large expansion of the company during and since the war had spread its forces in various buildings throughout the city, because of the shortage of office space. Early in 1949, to remedy this condition, Alcoa acquired the old Nixon Theater site, which is centrally located in the city, to implement plans for a headquarters building.

• **Deep foundations**—Work on the foundations began in July, 1950. The center of the 100x192-ft lot was excavated first leaving a protective berm along the streets. In the excavated area, small sheetpile cofferdams were driven through sand and gravel and poor shale down to good rock, which was found at depths of up to 90 ft



ALUMINUM PANELS for the building exterior were bolted to angles on the spandrel beams. All panels are one-story high.

BOLTING was done from inside the building. A screw jack near the floor permitted height adjustments.

below street level. After the cofferdams were excavated, concrete piers were built, some as much as 70 ft high to support the building columns. (Largest independent piers are 10 ft square, carry 4,800 kips.) Then, a concrete slab was poured in this central area.

Sheeting was driven around the lot boundaries and braced against concrete blocks anchored in the slab. Next, the berm was dug out and exterior piers built. This method of construction eliminated cross-lot bracing and kept the center of the site open for steel erection.

In the excavated space is a subbasement, which will contain storage rooms and part of the air-conditioning equipment; also a first basement above, which will have service and locker facilities. The latter also may ultimately become the terminal of an underground pedestrian tunnel connecting with the proposed Pittsburgh Parking Garage across the street. Pedestrians will be able to ride on a moving stairway from the first basement to the first floor, where stores and elevator lobbies will be located.

• **Floors go in fast**—The American Bridge Division of the U. S. Steel Co. started to erect steel in February 1951, and topped it out in August. To meet close tolerances for installation of exterior-wall panels, the steel erectors plumbed columns to within $\frac{3}{8}$ in. all the way up. Strong wind-bracing connections were installed at every floor, because the tower is tall (410 ft high) and narrow (only 64 ft wide). Column spacing varies but is mostly 20 ft along the exterior.

Floors and fireproofing followed closely behind the steel. The floors were placed in time to store wall materials in October. Foamed concrete was used for floor arches in the service core and for fireproofing all columns and spandrel beams.

Keeping up with the riveters, only about three stories behind the steel erectors, ironworkers placed cellular light-gage steel decking rapidly in the office areas, providing a working deck immediately. The decking, with electric and telephone wiring in the cells, was covered with a $2\frac{1}{2}$-in. thick, 2,000-psi stone-concrete fill. Later it was finished with plastic tile or carpet. The underside of the decking was fireproofed with 1 in. of perlite plaster on metal lath.

• **Hoists**—Building materials were brought up to the various floors on four hoists on the outside of the building. Before the walls were put in, the hoists were tied to the structural steel frame. After the walls were built, pipe braces and wire guys were substituted for the ties.

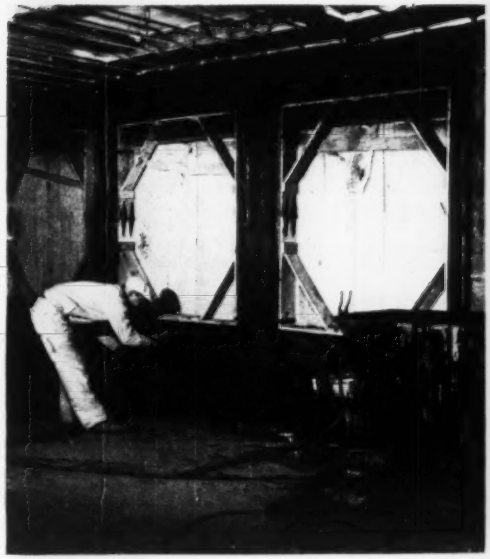
The new bracing was passed through window openings and held by U-bolts anchored to steel floor beams. Materials raised by the hoists then were brought into the building on ramps that passed through the window openings.

• **Light wall**—Stored on each floor until ready for installation, the aluminum facing was erected from the inside of the building. Panels were fastened by bolts to steel clip angles, which were bolted to the spandrel beams. While being attached, the panels were supported temporarily by a rope passed over a pulley that slid along a horizontal cable two stories above. A small screw jack, inserted temporarily at floor level, and slotted holes in the supporting angles, enabled the workmen to bring the panels to the proper elevation.

About $1\frac{1}{2}$ in. behind the panels, expanded aluminum lath was set up to receive the concrete backup wall, and steel reinforcing bars were tied in place. Then, the 4-in. thick backup of perlite concrete was sprayed on.

The lightweight perlite gives the wall thermal insulation, fire resistance and adequate structural strength to carry wind loads. Tests show the perlite concrete to have an average strength of about 2,000 psi; yet, the coefficient of heat transfer, U, for the wall is only 0.16.

As a final step, reversible, vertical-pivoted windows were set in the metal panels. They are 4 ft 2 in. wide by 4 ft 7 in. high. For insulation, they are double-glazed, the outer pane being $\frac{1}{4}$-in. thick, heat-absorbing, glare-



BACKUP WALL 4 in. thick was formed by spraying perlite concrete on aluminum lath and reinforcing bars.

REVERSIBLE WINDOWS with double glazing are made weathertight by inflating a rubber gasket.

reducing glass, the inner pane ¼-in. clear plate glass. The two panes are separated by a ½-in. sealed dry air space. A rubber gasket around each window is inflated to 22 psi to make it weathertight.

The windows will be kept closed, except when they have to be turned to be cleaned. To open them for cleaning, window washers, inside the building, will have to unlock them with a key and deflate the rubber gasket. After closing the windows, the washers will have to use an air pump to inflate the gasket.

Total weight of the wall is 40 psf (2.4 psf for the aluminum facing, 27 psf for the perlite-concrete backup and 10 psf for furring and plaster). Alcoa's engineers estimate that a conventional wall with 4 in. of limestone and 8 in. of brick backup weighs 150 psf. Projecting the weight difference of 110 psf to the 188,000 sq ft of exterior wall in the building, they figure their design saved 10,340 tons of dead weight. For a typical exterior column pier, the load was cut from 1,520 tons to 1,100 tons.

Interior partitions are built of terra cotta tile, plastered and painted, or double-glazed panels of corrugated glass in aluminum frames.

• **Panel heating and cooling**—There will be no radiators, pipes or under-window air-conditioning units along the outer walls of the building. Radiant heating and cooling panels in the ceiling make these unnecessary. As a result, there is a gain of rentable floor area of about 15,000 sq ft, equivalent to 1¼ entire floors of the building.

Incorporating flush-type aluminum lighting fixtures, the ceiling consists of 0.040-in. aluminum sheets, perforated for acoustical treatment. They are attached to the underside of a grid of ½-in. dia aluminum tubing, which will circulate hot or cold water.

Spaced 12 in. apart, the tubing was prefabricated in sections 6 ft wide by 12 ft long. They are held in place by hangers welded to 2-in. runner channels, which support the ceiling fireproofing. Turnbuckles in the hangers permitted the tubing to be adjusted to the proper elevation. A ¾-in. thick glass-fiber blanket then was placed across the pipe to absorb sound (not necessary for thermal insulation).

• **Ceiling and air share summer load**—Heated or cooled by water in the tubing, the ceiling will handle all of the winter heating requirements and about 50% of the summertime sensible cooling.

Air for ventilation and for the rest of the summertime cooling will be distributed through ducts to ceiling diffusers in room interiors. Primary fans for circulating the air are in the sub-basement, 14th floor and penthouse. These fans supply local mixing units and a small fan room on each floor.

Exhausted through grilles at exterior and corridor walls, the air will be returned to the fan rooms through a plenum between the aluminum ceiling and the fireproof ceiling above. Grilles, ductwork for air supply and fittings for the distribution system are made of aluminum.

• **Moisture controlled**—Relative humidity will be maintained within limits of comfort throughout the building at all times. It will be low enough, the designers say, to prevent condensation on the tubes or ceiling. Specifications call for an average 45% humidity and 70 F room temperature in zero weather, and a maximum 80 F room temperature with 95 F outside.

For flexibility of control, thermostats will be installed in some offices to take care of special conditions. They will vary panel output by modifying the rate of flow of water through the tubes.

Water for the heat-transfer coils will be heated by steam in hotwater converters in the sub-basement or cooled by refrigeration in the basement. Steam will be purchased from the Allegheny County Steam Heating Co. Refrigeration will be accomplished with two centrifugal compressors rated at 625 tons each. Cooling-tower water will be used for condensing.

Another application of panel heating for this building is in a snow melting system. Sidewalks and lobby floor incorporate wrought iron heating coils for snow melting or to dry water

that might be carried into the building in wet weather.

• **Vertical transportation**—The Alcoa Building will be served by one freight elevator and 14 passenger elevators arranged in two banks. A bank of six cabs, rated at 3,500-lb each, will stop at all floors between the lobby and the 15th floor. A second bank of eight cabs, rated at 2,500-lb each, designed to operate at 1,000 fpm, will stop at all floors from the 15th to the 30th. Electronically controlled, the system was designed for 20-sec interval service.

One elevator in the high-rise bank will be used as an auxiliary service elevator, except during peak traffic periods. This, and the freight elevator, will also serve the first basement and sub-basement.

Incorporated in the elevator system are doors, cab interiors, control panels, conduit and wiring of aluminum.

Mail will be distributed from a central mail room on the 15th floor to all Alcoa-occupied floors with the aid of two dumbwaiters. (Present plans call for the company to occupy all floors from the 6th to the 30th, inclusive.)

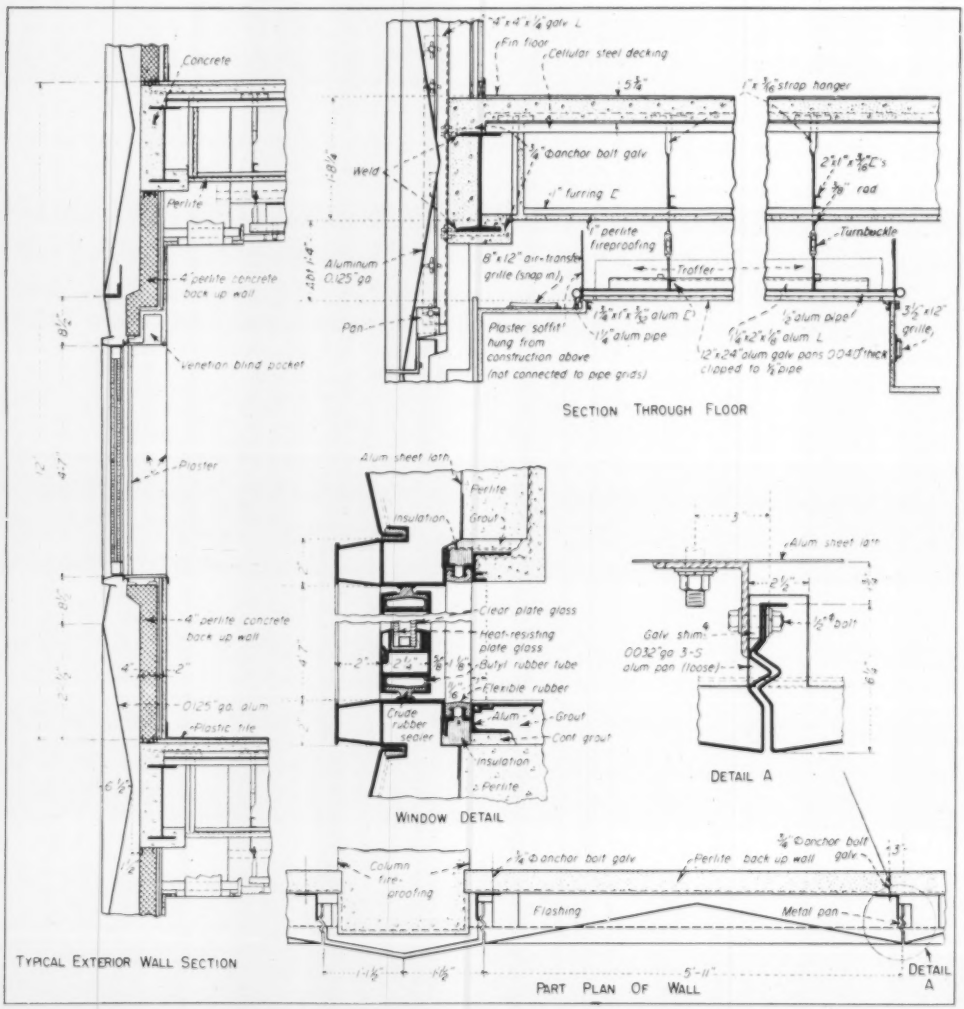
• **Aluminum distribution systems**—Domestic and drinking water is distributed through aluminum pipe. Rooftop water tanks, and the cooling tower, were made of aluminum, to eliminate maintenance painting.

Conduit and electric wiring also were made of aluminum. In addition, two risers of a newly developed low-reactance aluminum sector bus will replace conventional cables.

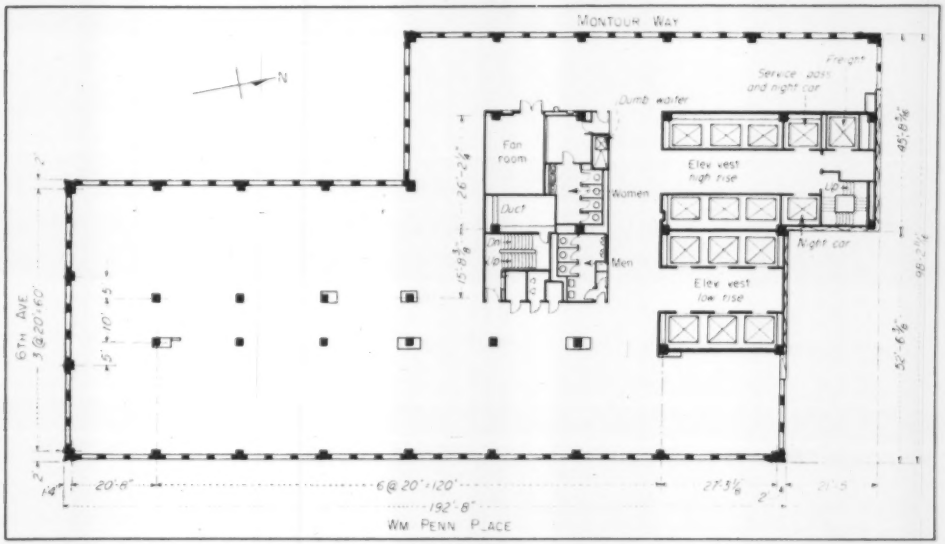
The building is expected to be completed late this year. In charge of construction for the Aluminum Company of America are Thomas D. Jolly, vice president in charge of engineering and purchasing, L. B. Kuhns, chief construction engineer; and E. C. Collins, construction superintendent.

Harrison & Abramovitz, of New York City, were architects, with Mitchell & Ritchey and Altenhof & Brown, of Pittsburgh, as associate architects.

Edwards & Hjorth were consulting



DETAILS of the unusual wall and floor construction showing how exterior facing is fastened and ceiling suspended.

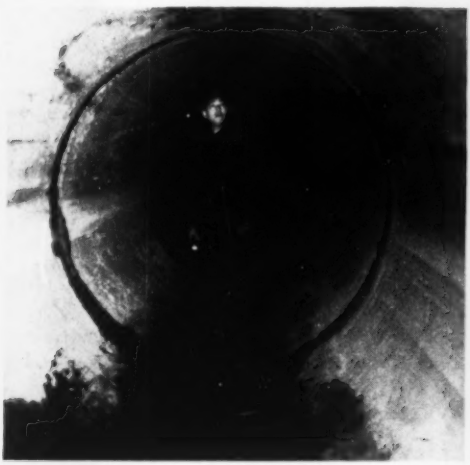


FLOOR PLAN is laid out with offices along the exterior walls. These spaces are heated and cooled by ceiling panels.

structural engineers; Jaros, Baum & Bolles were consulting mechanical engineers and designers of the panel heating and cooling system; Edward E. Ashley was consulting electrical engineer; and Moran, Proctor, Mueser & Rutledge were consultants on the foundations—all of New York City.

George A. Fuller Co. is the general contractor. The work is being carried out under the supervision of C. C. Roth, vice president in charge of Fuller's Pittsburgh office, Roy W. Booth, construction manager, William N. Hurst, mechanical supervisor, and Henry E. Sexton, general superintendent.

Inverted siphon river crossing found sound



HENRY VERMONT, resident engineer for the New York City Department of Public Works at its Hunts Point Sewage Treatment Plant, inspects joints in an 84-in. dia inverted siphon under the Bronx River. The 700 ft siphon was completed 11 months ago with Lock Joint pipe by Quist Construction Co. It was laid inside cofferdams at each shore, and in midstream 12 and 24-ft lengths were placed under water by divers. Final inspection of the siphon will be made before acceptance of the job in about a month; so far, Vermont finds it in acceptable condition. At right, the 10x9-ft cast-in-place interceptor approaching the river crossing from the east is checked by Michael Carey, assistant civil engineer. Tully & DiNapoli built this section, through which flow will reach $23-million, 120-mgd Hunts Point plant which goes into operation this summer (ENR Aug. 16, 1951, p 28). Finn Nord and F. Sammis were superintendents for Quist and Tully & DiNapoli respectively.

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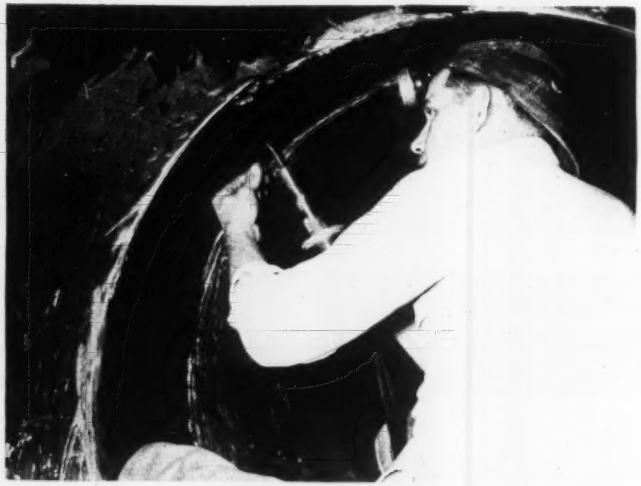


HOT AIR WELDING seals joints of plastic-lined reinforced concrete sewer pipe. Thermoplastic material is pliable when heated. Under proper temperatures it softens to the point where it can be welded or fused to form a watertight joint.

Plastic lining protects sewer

WORK is nearing completion on an 8-mile stretch of plastic-lined reinforced concrete sewer outfall in southern California. Purpose of the lining is to protect the concrete from deterioration as result of attack by hydrogen sulfide or other gases developed in the long, relatively flat line (ENR Jan. 24, p. 106).

This is the longest stretch of pipe so protected that has yet been installed. On this job it competes from a cost standpoint with vitrified clay pipe as shown by competitive bids.

Work involved is 39-, 42-, 48-, and 78-in. dia pipe on the Magnolia trunk sewer serving Fullerton, Anaheim, La Habra and other communities and unincorporated areas in Orange County, Calif. The new trunk sewer includes almost 42,000 ft of the reinforced concrete plastic-protected pipe and also includes 20,000 ft of 39-in. dia vitrified clay pipe. Besides domestic sewage the line will carry wastes from food packing plants (mostly citrus), petroleum processing plants and other industrial installations.

The long flat lines together with the nature of the waste material handled and the warm, mild climate encourage the development of sewer gases that are harmful to concrete structures. Thus, designing engineers on the job specified plastic-protected pipe for the larger sizes and either vitrified clay pipe or plastic-protected concrete pipe on the smaller sizes.

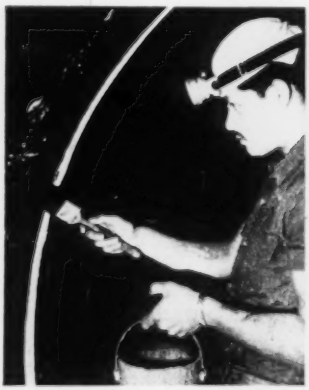
• **Resistant plastic**—The plastic material used is manufactured by Amercoat Corp., South Gate, Calif., under the tradename Amer-Plate. (ENR Jan. 24, p. 106). It comes in two forms: one a plain sheet and the other called T-Lock Amer-Plate. This latter has tees pressed out from the original sheet spaced at 24-in. intervals and is applied to inner forms of concrete structures or pipe. When the concrete is poured the tees become embedded. The plastic becomes an integral part of the finished product that can be removed only by rupturing the plastic material.

The material is made in sheets at least 0.06 in. thick. It has been tested and found completely resistant to all corrosive substances usually discharged in a sewer.

The plastic material is composed of very high polymer vinyl resins (B. F. Goodrich Chemical Co.'s Geon Polyvinyl chloride resin) combined with inert pigments and plasticizers. The sheets are semiflexible at 70 F, somewhat stiffer at lower temperatures and more flexible at higher temperatures.

The plastic material, being thermoplastic, softens with heat to a point at which two surfaces may be "welded" together. In the sewer line work, this permits sealing over pipe joints with additional plastic material to form a continuous air- and watertight lining.

Actually only the top portions of the pipe arch are protected: the top two-thirds for 39-, 42-, and 48-in. dia pipe and the top three-fourths for



ADHESIVE is applied to 78-in. dia pipe joint before attaching plastic joint strip.

BLOW TORCH softens dry adhesive to attach plastic strip to pipe.

PAINT TESTING involves several types applied in a sewer junction box.

78-in. dia pipe. That's because partial flow will expose only the top to damaging gases.

• **Sealing the joints**–The reinforced concrete sewer pipe is manufactured in 16-ft lengths. The pipe laying contractor points up the plain bell and spigot joints and allows the mortar to thoroughly cure.

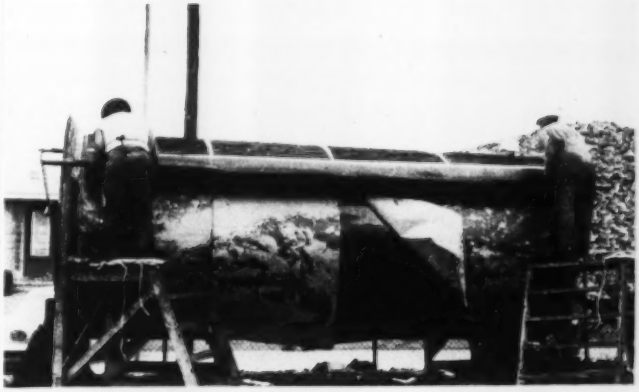
For the Magnolia trunk sewer, sealing the joints with the plastic material was done by Amercoat Corp., maker of the material. First step in sealing the joint with plastic is to brush on an adhesive. When this has thoroughly dried, a strip of the plastic 4 to 6 in. wide is applied over the joint. A blow torch softens the adhesive so the sheet will stick. After this has thoroughly cooled, narrower plastic strips are welded to each edge of the joint strip, sealing the joint between it and the plastic lining. A hot air torch operating at about 500 F and held about ¼ in. from the various plastic surfaces will soften the material so it will thoroughly fuse. After this is done, edges of the strip are beveled to form a smooth surface.

• **Pipe making**–Application of the plastic liner to the reinforced concrete pipe does not require any new or unusual procedures in the pipe manufacture. Certain precautions must be taken in handling the liner plate so as not to damage it during manufacture. And, naturally, the completed pipe must be handled with pipe slings and not hooks.

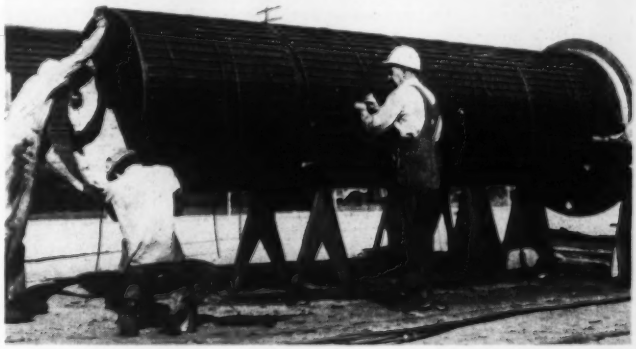
The inner pipe form is clamped to the base ring that forms the groove or bell end of the pipe. Then the whole assembly is switched to a horizontal position. After the form is oiled, oiled wrapping paper is cut to size and placed over the form to lie between it and the liner plate. This prevents scatching or cutting of the plastic by foreign material or by the form during later removal of the form. The plastic liner plate–fabricated by the manufacturer to proper size–is placed on the pipe form. Light steel banding tape around the assembly holds the liner plate in position. The rest of the process follows normal poured pipe-making procedure.

In this instance the pipe need only resist the vertical forces caused by backfill and other superimposed load. Accordingly, it is reinforced with an elliptical cage with the ellipse so arranged as to be near the tension faces of the pipe. A 4,500-psi, 28-day concrete is used. Acceptance is based on a three edge bearing test.

• **Paints tested**–One other interesting phase of the Magnolia trunk sewer work concerns a concrete protective paint testing program. At a large junction box on the line, eight different types of protective paints have been applied. Purpose is to test the long-time resistance of these paints to the sewer gases. In addition to two different coatings of microcrystalline wax, four different paint series provided by the Inertol Co. and two Amercoat Corp. paint series have been applied. Results will not be apparent for some time.



WORKMEN UNROLL PLASTIC MATERIAL onto inside form during pipe-making operations. Oiled wrapping paper between oiled form and plastic material will protect the liner when inside form is removed.



T-RIDGES ON PLASTIC LINER will securely bond pipe to concrete. Light steel straps hold plastic to inside form.

• **Credits**–The Magnolia trunk sewer is a $2½ million project jointly financed by the cities contributing to the work. N. H. Neff is chief engineer for the project. Koebig & Koebig, Los Angeles consulting engineers, prepared the plans. The city of Anaheim acted as contracting agency for the cities and unincorporated areas involved. A pipe supply contract was awarded to the American Pipe & Construction Co. Pipe was laid under contracts with V. C. K. Construction Co. ($1,467,226 total) and the combination of Chas T. Brown and Paul Vukich ($780,591).

Cost of the pipe at trench side ran as follows: 78-in.–$40.40 per ft, 48-in.–$21.30 per ft, 42-in.–$17.95 per ft, and 39-in.–$16.80 per ft. This includes the cost of the plastic liner. The pipe laying contracts include the cost of sealing the joints to make the plastic lining continuous.

The Magnolia trunk sewer discharges into a system of sewers, ocean outfalls, and treatment works, some existing and some yet to be built, under the jurisdiction of the Orange County Sanitation District. The future work will be undertaken with funds from a $8.3 million bond issue recently voted. Raymond R. Ribal is chief engineer and general manager for the Orange County Sanitation Districts.

Can cyanide in water supply cause symptoms mistakable for polio?

AN IMPRESSION OF DOUBT was put into minds of many sanitary engineers attending last fall's meeting of the Federation of Sewage and Industrial Wastes Associations in St. Paul: It was implied that industry's cyanide wastes in streams might cause poisoning having symptoms confusable with those of polio. (ENR Oct. 18, 1951, p. 29).

Here, from the Kettering Laboratory of U. of Cincinnati's College of Medicine, are the facts to dispell that doubt. Says Dr. J. S. Cass:

"When the signs of CN poisoning are compared with those of poliomyelitis several distinctive differences are evident.

"A trained physician will have little difficulty separating these two conditions in all but the most exceptional cases. An amazingly large number of diseases display many of the clinical signs seen in the course of poliomyelitis. Chronic cyanide poisoning does not present the problem of differential diagnosis that many of the other diseases do.

"Today, poliomyelitis is being studied intensely in the U.S. and elsewhere. This has made the physician acutely aware not only of the disease entities that can readily be mistaken for it. Cyanide poisoning is not among the latter."

• **Cyanide illness rare**—"Best available information indicates that only rarely have cyanide-bearing compounds caused acute illness in industries and occupations in which workers are exposed regularly to these substances. This is remarkable in view of the enormous quantities of cyanides used and handled without precautions in these industries," continues Dr. Cass. "It is still more remarkable that, as rare as acute cases of cyanide poisoning are, chronic cases of poisoning occur with even greater rarity.

"Clinical cases of so-called chronic intoxication appear to have been either mild or moderate recurrent manifestations of acute poisoning due to exposure on specific occasions to a quantity of cyanide above the safe limit for the individual involved, regardless of the fact that he may have been exposed previously to lower concentrations for a long time. There is no evidence to support the hypothesis that repeated small doses of cyanides over a long period of time build up in the body an increasing level of cyanide that eventually produces the clinical signs seen in acute poisoning.

"The body normally takes in small amounts of substances which contain cyanide (particularly members of the cabbage family and tobacco). The CN ion, except for a small portion exhaled, is changed rapidly to the relatively non-toxic sulfur complex (SCN, thiocyanate) in the liver, and is eliminated irregularly and slowly in the urine. There is no evidence that CN ion is stored in the body.

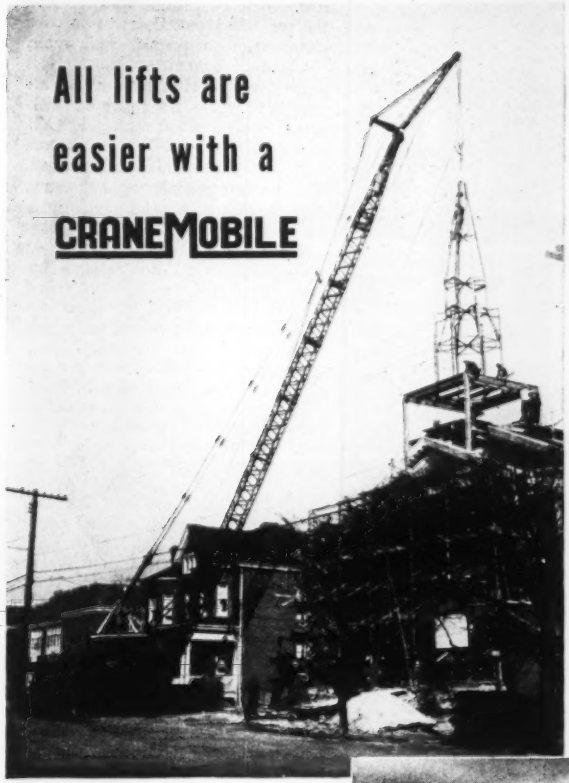
"Small doses of CN, incapable in themselves of causing intoxication, can be disposed of indefinitely in the body, since the natural detoxifying mechanisms are practically inexhaustible, although slow."

• **Polio picture is clear**—"Poliomyelitis provides as definite and demonstrable a clinical picture as does many another disease entity. While variable, it lends itself commonly to definite diagnosis when it developes beyond an initial stage. The clinical picture divides into definite periods." A comparison of symptoms appears below.

It's just such questions as this polio-cyanide thing that present research at Kettering Laboratory is set up to answer. Work under way is aimed at establishing physiological basis for safe limits of trace elements in water supplies. The Ohio River Valley Water Sanitation Commission is sponsoring the project (ENR Feb. 14, p. 125).

HOW THE SYMPTOMS DIFFER

Polio	CN Poisoning
1. Fever	1. No fever.
2. Spotty muscular paralysis. No generalized weakness.	2. Generalized weakness.
3. No excessive salivation.	3. Excessive salivation frequently with foaming and frothing at the mouth.
4. Clear intellect, no dizziness except in rare type.	4. Confused intellect, dizziness.
5. Respiratory signs: breathing difficulties present only in cases. Oxygen in blood is normal in these cases.	5. Respiratory signs: shortness of breath, rapid breathing. Oxygen content of venous blood is frequently above normal.
6. No coma except in infrequent suffocation resulting from paralysis of respiratory or throat muscles, and exhaustion.	6. Coma.
7. Cellular and protein increase in spinal fluid.	7. Same changes not present in spinal fluid.
8. No gross thyroid involvement.	8. Goiter associated with many cases.
9. Age incidence—The greatest incidence in 5-9 year olds. In some parts of the U. S. as many as 1/3 of paralyzed patients are older or adolescent children. Cases do occur occasionally in adults.	9. Age incidence—Reports indicate these poisonings (except under conditions of medical therapy) are related to exposure to high CN concentrations in industry in workers 25-65 years old, and are related therefore to occupation rather than age. The condition has not been reported or recognized in children.
10. SCN in blood and urine unaffected.	10. Abnormally high SCN in the blood and urine.
11. No convulsions.	11. Convulsions.
12. Vomiting, nausea and headache are of relatively short duration early in the pre-paralytic stage.	12. Vomiting, nausea and headache episodes occur over a period of time in many cases.



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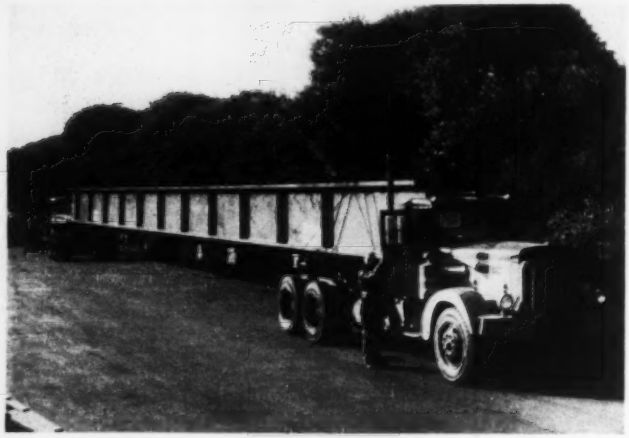


All-welded 106-ft girder built for highway overpass

IN ANTICIPATION of several miles of all-welded steel viaduct structure on San Francisco's Bayshore Freeway, California highway officials have built a 106-ft long, all-welded girder as a full-scale test. The girder is part of an overpass on the Eastshore Freeway on the Oakland side of the bay. Purpose of the test is to check adequacy of specifications covering both material and welding procedures for heavy all-welded structures.

One question considered was the amount of preheating necessary for a girder of this type. In the Oakland case the flanges were each 3 in. thick and the web $\frac{5}{8}$ in. thick. Continuous $\frac{1}{4}$-in. welds made by fully automatic equipment joined the web and the flange.

Specifications called for preheating of areas adjacent to the welds to 300 F. Careful sequencing of heating and welding was necessary.

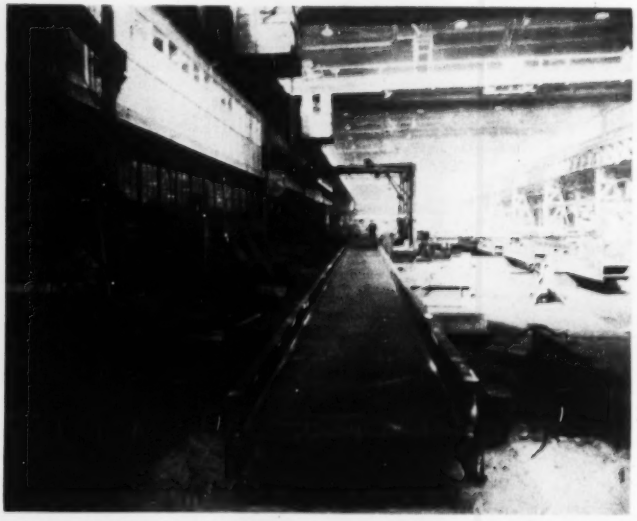
The completed test girder was perfectly true with welds beyond criticism. State officials are now studying the prescribed procedures to see if a lesser amount of preheat is allowable.

Chemical content of the steel is also a question. High-carbon steels are difficult to weld—particularly in thicknesses required in this work. The Oakland girder had 0.29% max carbon, with 27,500 psi-yield point specified. It now seems possible to get the same strength with slightly less carbon content.

The Eastshore Freeway girder is 4½ ft deep and spans 100 ft between supports. Bottom flange is 3x20 in. and the top flange is 3x16 in. Shear lugs welded to the top permit composite action with the concrete deck.

Hauling the 30-ton unit through city streets also presented a problem. Two trucks were used, one supporting one end the other merely steering the back end supported on a set of heavy trailer wheels.

The girder was fabricated, hauled and erected by Judson-Pacific-Murphy Corp., Emeryville, Calif. The freeway work is directed by G. T. McCoy, state highway engineer, with bridge design and construction under the direction of F. W. Panhorst, assistant state highway engineer.



GIRDER BEING WELDED in shop. Flanges are 3x20 in. and 3x16 in. Web is $\frac{5}{8}$ in. thick. Amount of preheat is under study.

Grading contract let for Nashville project

Oman Construction Co., of Nashville, Tenn., and Codell Construction Co., of Winchester, Ky., have been awarded a joint contract for $2 million for grading, drainage and paving of grade separations between county roads and railroad tracks in the L & N and NC & St. L. expansion project in Nashville (ENR Jan. 24, 1952, p. 27).

The project is part of a $14-million undertaking to move the switchyards of the railroads from a "gulch" in the heart of Nashville to a suburban area south of the city.

Work is expected to begin within a month and completion is scheduled within a year. This project is preliminary to the laying of 85 mi of track and installation of retarder equipment.

Plans for a joint diesel shop, yard offices and other buildings are on the drawing boards, according to L. L. Adams, chief engineer for L & N in Louisville.

Residents of the area vigorously protested the expansion project. However, the county board of zoning appeals granted the railroad a zoning exception for the project.

Although the action of the board has been appealed to Chancery Court, preliminary work is going forward on the classification and departure yards.

Where you will find THE REAL REVOLUTION

"If we keep in mind the values of opportunity, competition, democracy, productivity, then it is our capitalist society which is the truly revolutionary one – the only society which offers true hope to the masses for release from the long nightmares of tyranny. It is we, not the Marxists with their reactionary ideas of the good dictator, who have the truly constructive, the truly revolutionary ideal."

– from "Capitalism" by David McCord Wright.

If we can only win recognition of this truth, we shall win the struggle of free men against communism. This editorial discusses some of the hurdles that must be cleared.

To win the needed recognition that "our capitalistic society... is the truly revolutionary one," we must keep pounding away both abroad and at home. That is because the communists simultaneously attack us on an international front and try to undermine us from within.

The present drive to rearm ourselves and our allies is crucial to our self-protection on the international front. We must be prepared to meet the armed force of aggressive communism with armed force if we are to secure our physical freedom.

Arms are not enough

But to re-establish parity in arms is only half of the battle. In the last analysis it is not the more important half. To be effective, our arms must be backed by loyalty of men to our ideals. So, both abroad and at home, we must win men to the faith that we do have "the truly constructive, the truly revolutionary ideal."

On the international front, the effort to win adherence to such faith in our capitalist society meets tough going. That arises from the fact that in some of the countries that are allied with us in the fight against communism, capitalist society has offered to its people no such ideal. In varying degrees "the values of opportunity, competition, democracy, productivity" – those key aspects of American capitalism–are either absent or subordinated in their economic life. Indeed, the *Wall Street Journal* recently remarked that "to the European, capitalism has become synonymous with cartels – and with the disregard cartels foster for the consumer, the worker and the over-all well-being of the nation's economy."

No Simple Solution

Nonetheless, many European labor and governmental leaders sincerely believe that cartels are essential to their economic salvation. They believe that without such restrictions in congested European markets there would be intolerable cut-throat competition and instability of employment. Thus, when we point out that the cartel capitalism so prevalent in Europe lacks the constructive qualities of competitive American capitalism, we may offend European leaders whose wholehearted cooperation we need in the fight against communism.

But, if we soft-pedal that contrast, we sacrifice the opportunity to win understanding and loyalty from millions of Europeans who have had no chance to learn that capitalism can be the constructive and liberalizing force that it is in the United States. Indeed, when many of these millions embrace socialism it is not because they love it. They are rather desperately seeking a tolerable middle course between what they consider the hateful extremes of communism and the undesirable aspects of capitalism as they understand it.

New name not the answer

We know that there is no easy way to handle the problems created by such misunderstanding of American capitalism. Neither do we share the belief that much of the difficulty would be overcome if we were to call American capitalism by some other name. By doing that, the argument runs, we shall relieve it from the unpleasant connotations that are attached to the word capitalism in some other parts of the world. But, after all, if we are to give up all the terms that have come to mean something else in other parts of the world, we must begin by ditching the term "democracy" which, in the official jargon of the Kremlin, seems to mean what we call dictatorship.

In spite of the difficulties, however, we must stick to this job of exporting the truth that our capitalist system does offer opportunity, competition and democracy. We must let the rest of the world see that it means a continuous drive for increased productivity, and the search for profits by increasing sales and consumption, not by trying to sell less for more.

Export alone not enough

The spreading of truth about American capitalism will not be effective if it is merely directed abroad. Unless it is carried on at home also, it will lack the driving faith that is essential to any convincing export of this type. Nor will export alone come to grips with the communist attack on our country from within—an attack that gets too much help from loyal Americans who short-sightedly repudiate the basic principles of our institutions in their efforts to reform some of their deficiencies. For success both at home and abroad, we must have right here at home a much more militant recognition that it is in fact our capitalist society which offers "the truly constructive, the truly revolutionary ideal."

Here at home, too, this raises difficult complications. Businessmen who are among the leaders and principal practitioners of capitalism, have generally been catalogued as conservatives. Hence, many people must stretch their imaginations a bit to see that businessmen are leaders of a development which has so greatly and so rapidly improved the lot of free men in America that it is truly revolutionary.

These difficulties of definition, however, are relatively superficial aspects of the problem of seeing our capitalist society clearly. The basic facts are that:

American capitalism is leading free men to an ever higher material standard of living while respecting their spiritual, social and political freedom.

Communism is leading its people back into a life of servile regimentation under dictatorship.

American capitalism advances to high ground never before attained by free men. Communism retreats to ground that men with an appetite for freedom throughout the ages have sought to escape. If we can establish this truth firmly, around the world, we shall no longer need to worry about communism. It will be hopelessly sunk.

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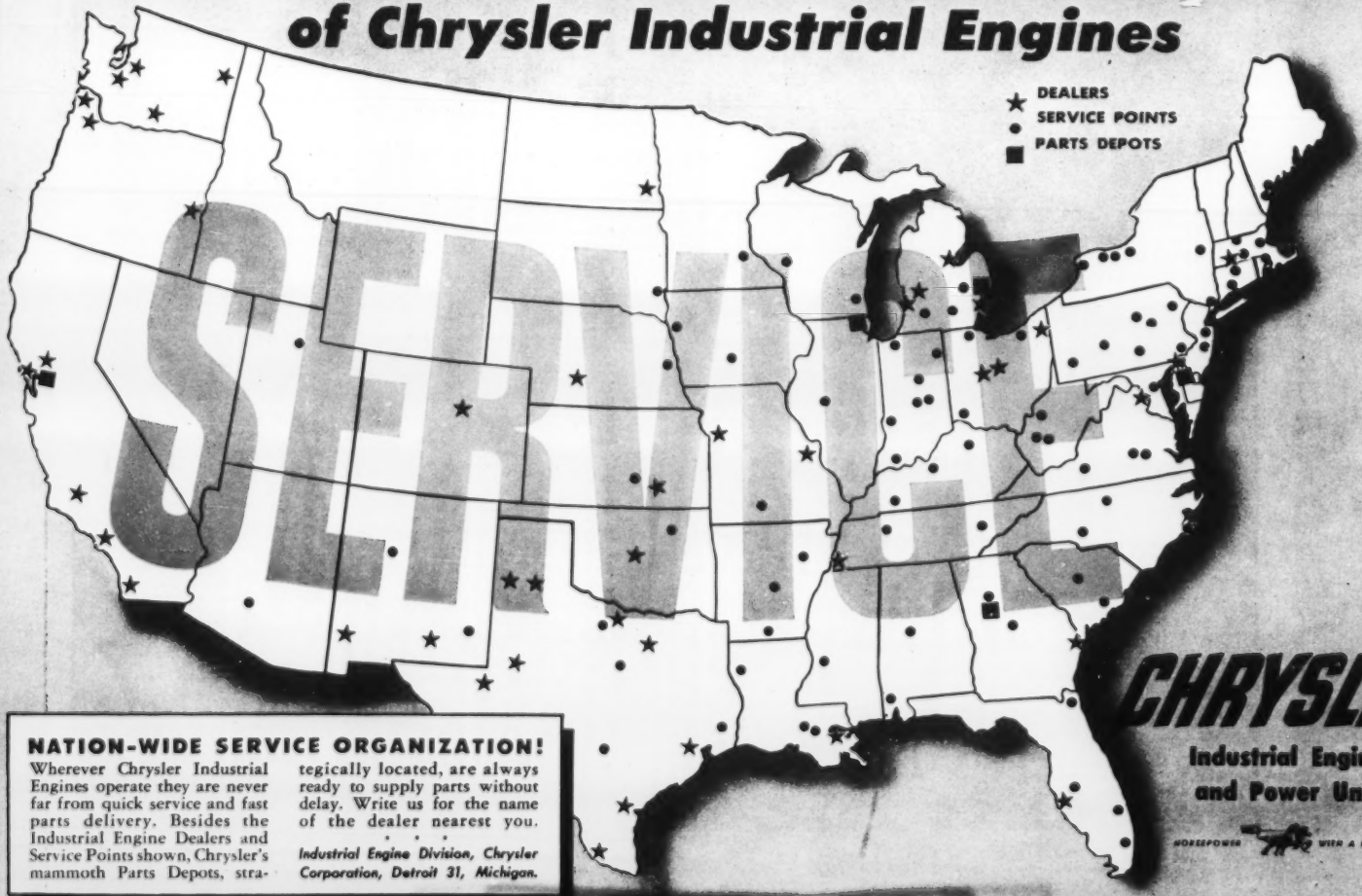

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Wherever Chrysler Industrial Engines operate they are never far from quick service and fast parts delivery. Besides the Industrial Engine Dealers and Service Points shown, Chrysler's mammoth Parts Depots, strategically located, are always ready to supply parts without delay. Write us for the name of the dealer nearest you.

• • •

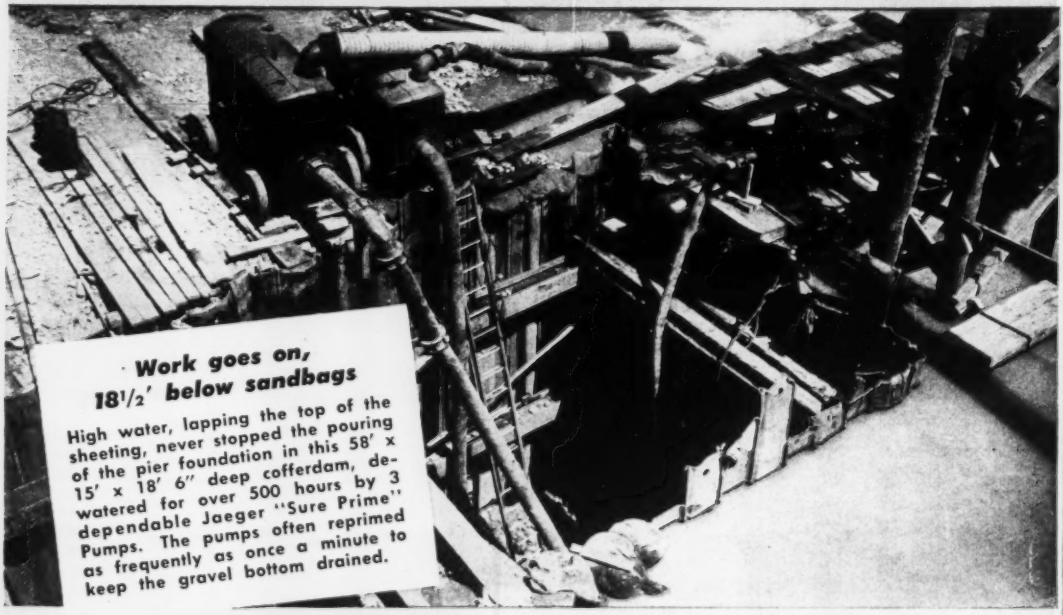
Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

CHRYSLER

Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE

6 jobs that you can do at lowest cost with Jaeger-engineered equipment



Work goes on, 18½′ below sandbags

High water, lapping the top of the sheeting, never stopped the pouring of the pier foundation in this 58′ x 15′ x 18′ 6″ deep cofferdam, dewatered for over 500 hours by 3 dependable Jaeger "Sure Prime" Pumps. The pumps often reprimed as frequently as once a minute to keep the gravel bottom drained.

Oversize design pays off in Jaeger Pumps: Larger shells and impellers, double priming action and use of the largest engines applicable enable Jaegers to prime and pump at lower operating speeds than other pumps. Means less abrasive wear and longer service from both pumps and engines.

Jaeger Compressors speed up jobs with 15% to 25% more air: The "Air Plus" Model 125 (20 ft. more air than old 105's) efficiently runs this 5 hp. Ka-Mo drill, or 2 heavy paving breakers or a heavy rock drill. 75, 185, 250, 365 and 600 ft. sizes offer comparable advantages.

100 cfm more air does 40% more work

600 cfm of 100 lb. air (the new standard set by Jaeger) runs two 4″ wagon drills at top efficiency, drills 40% more footage than you used to get with 500 ft. compressors.

Note that traction is on subgrade. Machine is blending joint and laying flush to header.

JAEGER AGGREGATE SPREADER

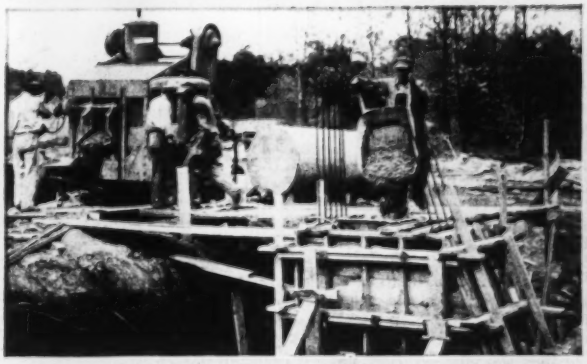
for highway and airport base, secondary roads and black top drives

This paver-type spreader costs ½ the price of bituminous pavers and can lay both base and surface aggregates, free-flowing hot or cold bituminous mixtures and plant-mixed stabilized soil, in a wider range of widths and thicknesses — up to 12″ of graded or fine materials or up to 10″ of coarse stone, in widths to 11′ — or courses of slightly less thickness up to 12½′. Crawler or 4-wheel drive. 2 models, for any size trucks.

Notice perfect surface prepared for the Finisher by the oscillating metering screed of the Spreader.

3-screed paving team for concrete slab

With its 12″ oscillating screed, operating behind the spreading screw and strike-off, the Jaeger Spreader accurately meters the correct amount of material needed for proper finishing. Saves carry-back and insures uniform compression under the dual screeds of the Jaeger Finisher. Diagonal rear screed is also available on Type X Finisher for pitched slab or super-elevated curves.



More batches per day with Jaeger mixers

5 to 7 seconds charging with the famous "Skip Shaker" loader, plus equally fast discharge from the big bucket and flight blades of the Jaeger "Dual Mix" drum, shorten your mixing cycle for every batch. Means bigger daily yardage for Jaeger owners. Machined steel drum tracks, Timken bearing rollers and heavy duty automotive transmission mean longer life.

There's a Jaeger "service station" in 153 cities — always near your jobs. See your nearest Jaeger distributor for sales, rentals, service — or write us for complete catalogs.

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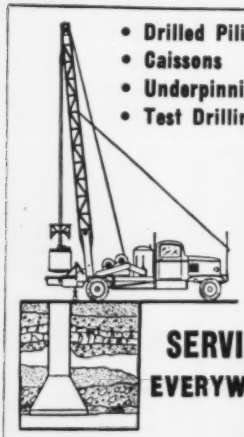
200 Dublin Avenue, Columbus 16, Ohio **Cable Address BIGANLITLE**



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ENGINEER • CONTRACTOR

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- HANDLES EASIER
- PLACES FASTER
- STAYS DURABLE

*PLASTIMENT is the chemically Retarding Densifier especially developed for concrete work which requires your guarantee. Retards set, densifies mix to provide controlled properties far superior to reference concrete. Designed for use with all types of aggregates and all methods of mixing and placing. PLASTIMENT-Concrete's ease of handling and superior results find ready on-the-job acceptance in every phase of construction. For full details, write or call

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C. H. SPENCER, left, construction engineer for the Bureau of Reclamation at Hungry Horse Dam, Montana, presents superior accomplishment awards to, left to right, A. A. Brownson, chief of general surveys; C. I. Beck, chief of dam surveys, and E. J. Niemen, field engineer.

Engineers rewarded for survey method

Development of a revolutionary survey control method (ENR Feb. 7, p. 41) that is resulting in improved accuracy and substantial savings in survey costs in construction of Hungry Horse Dam in northwestern Montana has won Department of the Interior superior accomplishment awards for three Bureau of Reclamation employees.

One-step pay increase awards were granted to E. J. Niemen, Field Engineer, A. A. Brownson, Chief of General Surveys, and C. I. Beck, Chief of Dam Surveys at the Hungry Horse project.

Basically, the new survey method, which is the result of the joint efforts of the three engineers, involves adoption of an optical plummet to project vertical survey control lines upward as the huge concrete dam grows in height. Block layout for location of penstocks, elevator shafts and other features is accomplished with much greater accuracy, and at a considerable saving in time and labor by using the vertical control lines obtained with the optical plummet as compared with previous survey methods.

Use of the new method eliminates the need for one field party, and bureau engineers estimate that total savings at the Hungry Horse project over a 2-year period will be approximately $37,000.

The Hungry Horse project has received many requests for detailed information on the method. Bureau of Reclamation engineers predict that many other projects will ultimately use the new method in construction of dams and other heavy construction work.

Army engineer in new post commands about $1 billion

Col. Benjamin B. Talley, CE, was recently designated Division Engineer of the North Atlantic Division, Corps of Engineers, U. S. Army. Col. Talley has been a regular member of the corps since 1926.

In his new job, Col. Talley will be in charge of the Districts of New York, Philadelphia, Baltimore, Washington, D. C., and Norfolk. Military construction work under his command in these districts totals $840 million and civil works, including river and harbor and flood control projects, is over $80 million.

Careers . . .

• **Appointed**—Franklin S. Brown has been transferred by the Corps of Engineers to Portland, Ore., where he will serve as chief of engineering for the North Pacific Division. . . New traffic

engineer for the City of San Antonio is **Stewart Fischer,** formerly traffic engineer for the Houston Expressway system. . . Wortham W. Dibble, the engineer who worked out Memphis, Tenn., postwar traffic improvements was given a contract—for one year—to bring the city's 27-year old city plan up-to-date. . . **Paul E. Moyer,** a civil engineer, has left the engineering department of the DuPont Co., Wilmington, Del., to become chief civilian engineer of the repairs and utilities division, Alaska Air Command, USAF. . . **Robert B. Diemer** has been appointed general manager and chief engineer of the Metropolitan Water District of Southern California, one of the largest domestic water supply systems in the world.

Col. Jack P. Campbell, Chicago district engineer for the U. S. Army Corps of Engineers since Oct. 3, 1949, has been assigned to the Mediterranean Division, French Morocco. . . **Edward J. Morgan,** manager of the water sales division, has been appointed manager and chief engineer of the Honolulu Board of Water Supply. . . Former state highway engineer of Georgia, **Mose Cox** was named consulting engineer of Georgia's proposed Cartersville to Chattanooga super toll highway. . . **Col. Walter Kreuger, Jr.,** has been assigned to duty as District Engineer, Philadelphia District of the Army Engineers. . . Newly-formed Virginia Asphalt Association, Inc., of Richmond, Va., is under executive direction of **John J. Forrer.** . . **P. J. Howe** has been appointed vice-president and chief engineer of Carter Construction Co. Ltd., Toronto.

• **Elected**—Ohio Society of Professional Engineers has elected **Raymond A. Freese,** Cleveland, as president. . . **L. H. Stott** has been made vice president and manager of the engineering department of Robert W. Hunt Co., engineers of Chicago. . . Connecticut state highway department's chief engineer **Warren M. Creamer** was voted the presidency of the Connecticut Society of Civil Engineers.

• **Honored**—Dr. Franklin Thomas, civil engineer and dean of students at the California Institute of Technology, has received the fourth annual Construction Industries Achievement award sponsored by the Los Angeles Chamber of Commerce. . . A unique honor was paid to **Roderick L. Downing,** professor of civil engineering at the University of Colorado, when he received a scroll naming him "Father of the Boulder-Denver Turnpike." He had first presented the plan for the $6.5 million highway at a conference in 1941.

Adjustable . . . 1/32" 1/8" 1/16" 1/4" to any fraction of an inch!

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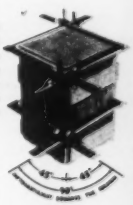
THE ONE-MAN SHORE

Rooshors are instantly adjustable to hairline accuracy . . . no fumbling with pins and no time-consuming screw adjustments to delay setting or become clogged with concrete. Wooden upper members allow nailing horizontal and diagonal bracing. Rooshors fit every job and are easily handled by one man. Three sizes: 8 ft. to 14 ft., 7 ft. to 13 ft., and, 5 ft. to 9 ft.—higher stories are shored with the Roos Extension Shores.

ROOS COLUMN CLAMPS

● **fast** ● **foolproof**

Roos Column Clamps eliminate lost time and motion in fitting and adjusting. Hinged units have castings on both legs of each hinged piece so that there is no wrong way to put them on (no rights and lefts). They automatically square the column and have no loose parts—a hammer is the only tool needed with Roos Column Clamps.



Rooshors and Roos Column Clamps are available for rental from warehouse stocks in principal cities from coast to coast.

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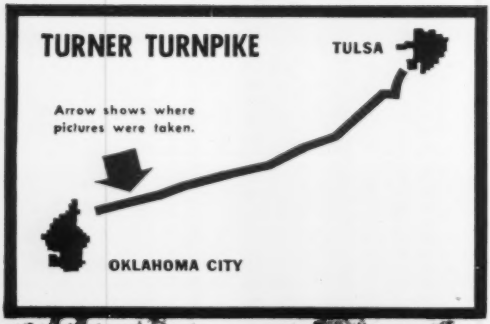
Turning on the Power on the

Turner Turnpike



"Big Red"—the International TD-24 —carries the load for contractors on Oklahoma's new superhighway

12,500,000 cubic yards of earth are being moved to build the great new Turner Turnpike—a four-lane, limited access superhighway between Oklahoma City and Tulsa, 88 miles away.

Contractors on the job report that their International TD-24s are moving more dirt per day, because they have more power, more speed and more steer-ability than any other crawler on the market.

As Vernon Pool of Pool Construction Co. says, *"Nothing can beat these TD-24s. We have ten of them on our section of the Turner Turnpike. They out perform any other tractor I've ever seen. Our operators love them.*

"We've had all kinds of tractors, but the next ones I buy will be Internationals, too. One big reason besides their performance is that we always get prompt service from our International Distributor."

Get the low-down on TD-24 superiority from your International Industrial Distributor. Then consider the service he offers you—and you'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

HAPPY CONTRACTOR is Vernon Pool (right) as he tells International Distributor D. V. MacDonald how good his TD-24s are. "One of them has 6,655 hours on the meter in three years," says Pool, "and it's working right along with the others."

INTERNATIONAL HARVESTER

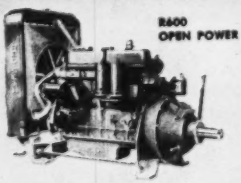
INTERNATIONAL

POWER THAT PAYS

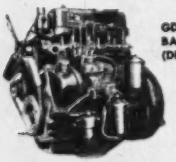
TEN TD-24s GIVE PLENTY OF POWER FOR POOL. Pool Construction Co. is one of seven contractors with fleets of International crawlers on the Turner Turnpike. Pool has 14 Internationals on its section of the job, and 10 of them are TD-24s. Here you see three of these "Big Red Champs" push-loading self-propelled scrapers.

There's Best Engine FOR EVERY APPLICATION ...THE... CONTINENTAL Red Seal TAILORED TO THE JOB

Few and far between are the items of construction equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to its work. Continental builds to more than 1,000 different specifications to place at your disposal the one best power source for your job.



R600 OPEN POWER UNIT



GD157 BARE ENGINE (DIESEL)

In addition to 4- and 6-cylinder liquid cooled engines from 13 to 192 h.p., Continental builds 10 four-cycle air-cooled models for a wide range of industrial uses requiring from 1½ to 2½ h.p. Service and parts in every community. For information on this line address Air-Cooled Engine Divn., 12800 Kercheval Ave., Detroit 14, Michigan.

AD-7

INDUSTRIAL GASOLINE ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
N56	4	2¼	3½	56	13 @ 2000 RPM
N62	4	2⅛	3½	62	16 @ 2200 RPM
Y69	4	2½	3½	69	21.4 @ 2400 RPM
Y91	4	2⅞	3½	91	28.5 @ 2400 RPM
Y112	4	3⅛	3½	112	32 @ 2400 RPM
F124	4	3	4⅛	124	36 @ 2400 RPM
F140	4	3⅛	4⅛	140	42 @ 2400 RPM
F162	4	3⅜	4⅛	162	49 @ 2400 RPM
F186	6	3	4⅛	186	60 @ 2400 RPM
F209	6	3⅛	4⅛	209	68 @ 2400 RPM
F226	6	3⅛	4⅛	226	73 @ 2400 RPM
M271	6	3⅜	4⅛	271	86 @ 2400 RPM
M290	6	3¼	4⅛	290	92 @ 2400 RPM
M330	6	4	4⅛	330	104 @ 2400 RPM
B371	6	4⅛	4⅛	371	106 @ 2200 RPM
B427	6	4⅛	4⅞	427	122 @ 2200 RPM
G134	4	3⅛	4⅛	134	32.2 @ 2000 RPM
G157	4	3⅛	4⅛	157	37.7 @ 2000 RPM
H227	4	3¼	5½	227	54 @ 2000 RPM
H243	4	3¼	5½	243	58 @ 2000 RPM
H260	4	3⅛	5½	260	60.2 @ 1800 RPM
T371	6	4⅛	4½	371	119 @ 2400 RPM
T427	6	4⅛	4⅞	427	140 @ 2400 RPM
U501	6	4½	5¼	501	160 @ 2400 RPM
R513	6	4½	5¼	513	164 @ 2400 RPM
R572	6	4¼	5½	572	182 @ 2400 RPM
R602	6	4⅛	5½	602	192 @ 2400 RPM
S749	6	5⅛	5½	749	188.5 @ 1800 RPM

INDUSTRIAL DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
GD157	4	3⅛	4⅛	157	37.5 @ 2000 RPM
HD243	4	3¼	5½	243	53.1 @ 2000 RPM
HD260	*4	3⅛	5½	260	57 @ 2000 RPM
TD427	6	4⅛	4⅞	427	102 @ 2000 RPM
RD572	6	4¼	5½	572	137 @ 2000 RPM

*Available for Industrial applications only.

CONTINENTAL MOTORS — Powerful as the Nation — AMERICA'S STANDARD — 1905 1952

Continental Motors Corporation
MUSKEGON, MICHIGAN

ANY EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER

MEETINGS

60,000 prefab homes to be built this year

Manufacturers of prefabricated houses expect to supply eight percent of the new homes to be built in the United States in 1952. They are shooting for a goal of 60,000 units, or one-fifth higher than the production of 50,000 houses last year. This encouraging picture was reported by Harry H. Steidle, manager of the Prefabricated Home Manufacturers' Institute, at its ninth annual meeting in Chicago March 25.

"Our job has been much more complex than the promotion of breakfast food, soap, automobiles or other mass-produced products", he said in his report. "We have had to sell not only the ultimate buyer but also the builder, the building inspector, the mortgage lender and the mortgage insuring agency as well."

Since World War II, 250,000 prefabricated homes have been built in the United States, according to Steidle, or one out of each 25 new dwellings in nonfarm areas. This year this ratio will be doubled, with eight out of each 100 new houses being built in the factory.

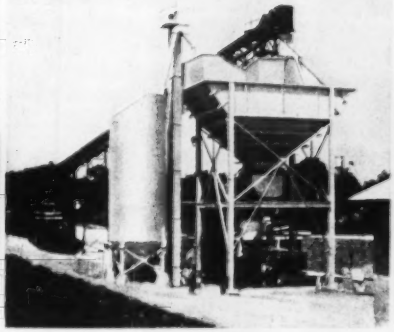
John C. Taylor, Jr., president of the institute, has warned that the goal of the 1952 housing program, 800,000 "starts," will not be attained unless adequate financing is provided for loans on defense homes and government-supported mortgages. He added:

"The mortgage picture as of today does not look good. Some provision has been made to speed up defense housing in certain areas, but in general the program is lagging, particularly since funds of the National Federal Mortgage Association are no longer available on pre-commitment.

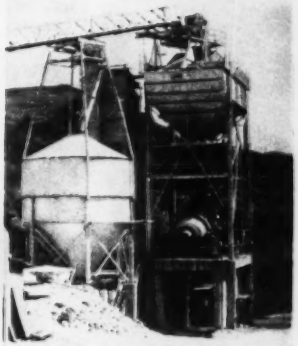
"An analysis of the general situation indicates that our housing program is built around VA and FHA insured mortgages. The interest rates are set by our government and a 'floor' is put on the price of these mortgages. When the money market is such that institutions will not buy at the 'floor' price mortgages at the rate of interest set, there is no sale.

"I am convinced that more and more institutions will resort to open market transactions for mortgages. When a certain amount of money has been accumulated, these institutions will want to purchase mortgages in the open market and the tendency to pre-commitment will grow less and less as time goes on."

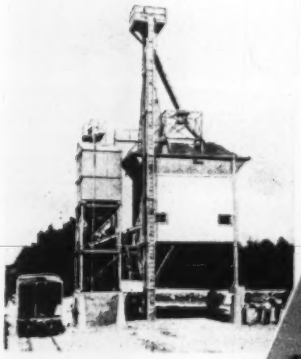
ERIE GTE 79 Cu. Yd. 4-Compartment PORTABLE type Bin for loading compartment trucks and truck-mixers.



ERIE Combination Truck-mixer and Concrete Products Plant—CTBS 267 Combination Aggregate and Cement Bin with 2 Cu. Yd. Combination AggreMeter —872 bbl. ERIE CSB Silo Cement Bin—air operated gates controlled from the ground—operating in SOUTH CAROLINA.



ERIE CTBS 267 Cu. Yd. Combination Aggregate and Cement Bin with 3 yard AggreMeter. Also ERIE M-3 (492 bbl.) Cement Bin and ERIE 2360 bbl. ground storage Cement Bin, interconnected. A Central-Mix Dual Mixer Plant in PUERTO RICO.



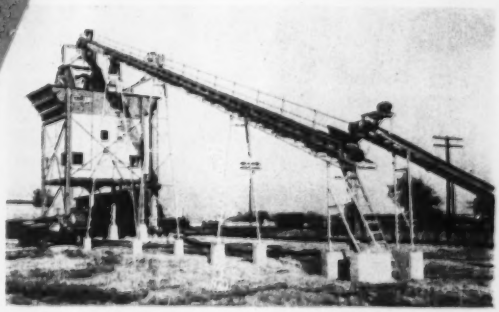
ERIE CTB 160 Cu. Yd. connected to ERIE 492 bbl. Cement Bin—operating in MAINE.

ERIE *Combines*

STANDARD UNITS to meet SPECIAL NEEDS . . .

Consult with Erie engineers to get exactly the type of batching plant that will meet your needs and your pocketbook. Our pioneer experience in the design and manufacture of all types of Bins, AggreMeters, Conveyors, Elevators and Controls for aggregate and cement handling is at your service. New developments in air and electronic controls for filling bins and batching materials speed operations. Outline your requirements and the output you desire and we'll show you how to combine the proper Erie units most economically. Let's have your problem.

ERIE CTBS 118 Cu. Yd. Combination Aggregate and Cement Bin. Other sizes 98, 202 and 267 Cu. Yd.

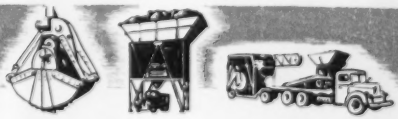


ERIE Central Mix Plant—CTBS 267 Cu. Yd. (3 Yd. AggreMeter and E5 Cement Elevator fed by Undertrack Screw—operating in ARKANSAS.

ERIE

STEEL CONSTRUCTION COMPANY

124 GEIST ROAD • ERIE, PENNSYLVANIA



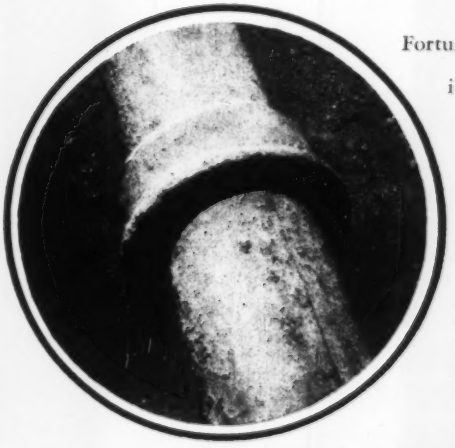
This is the pipe

that's known as the

Taxpayers' Friend

To a tax-burdened public the statement that cast iron pipe is the "taxpayers' friend" is more than a mere figure of speech. To most waterworks engineers it is a cold fact. They know that cast iron pipe in water distribution systems has saved, and continues to save, millions of dollars in local taxes.

The useful life of cast iron pipe is known to be 4 to 5 times the average term of a water revenue bond issue. More than 35 American cities have cast iron mains in service that were installed over 100 years ago. A survey sponsored by three waterworks associations shows that 96% of all six-inch and larger cast iron pipe *ever laid* in 25 representative cities, is still in service.



Fortunately for taxpayers, over 95% of the pipe in America's water distribution systems is long-lived cast iron pipe—*the taxpayers' friend.*

This cast iron water main installed in Richmond, Virginia, 120 years ago, is still in service. Over 35 other cities have century-old cast iron mains in service.

CAST IRON ®

CAST IRON PIPE

America's No. 1 Tax Saver

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CAST IRON PIPE RESEARCH ASSOCIATION, THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

UNIT TV*

*Terrific Value...
IN EVERY CHANNEL OF OPERATION!

Select
YOUR FAVORITE UNIT STAR

- 357 Mobile Type ½ Yard Excavator Crane up to 9 tons.
- 614 Crawler Type ½ Yard Excavator Crane up to 8 tons.
- 1020 Crawler Type ¾ Yard Excavator Crane up to 10 tons.
- 1520 Mobile Type ¾ Yard Excavator Crane up to 20 tons.
- 1014 Truck Crane ½ Yard Excavator Crane up to 12 tons.
- 1520T Truck Crane ¾ Yard Excavator Crane up to 20 tons.

All Models Convertible to ALL Attachments.

UNIT 1520T Crane offers "WIDE RANGE MOBILITY" plus a 20 ton lifting capacity and ¾ yard for excavator service. It is mounted on a 3-axle, tandem drive carrier, designed and custom-built for heavy duty operation. DUAL POWER — one engine for travel, one for lifting or digging. Air brakes on all four rear wheels assure the operator of safe traffic speed travel. Unit's Full Vision Cab offers complete visibility for safe operation.

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Meetings . . .

Missouri River flood discussed at meeting

Last week governors of three Missouri River basin states and basin chiefs for six federal agencies concerned with river and resources development heard Col. L. J. Lincoln, Kansas City Army district engineer, warned that lower Missouri River valley control works are vitally needed.

Even if the Missouri River could be closed off at Omaha, disastrous floods still would occur in the lower valley until the works were built on its tributaries, Colonel Lincoln said, speaking to the Missouri Basin Inter-Agency committee at Kansas City.

Attending were Governors Forrest Smith of Missouri, Sigurd Anderson of South Dakota and Norman Brunsdale of North Dakota.

Federal members of the committee in attendance were: B. H. Greene, Chicago, regional engineer of the Federal power commission, chairman; Brig. Gen. Don G. Shingler, Omaha, Missouri River division engineer; Gladwin E. Young, Lincoln, Neb., Missouri Basin field representative of the Department of Agriculture; Harrell F. Mosbaugh, Billings, Mont., chairman of the Department of Interior basin field committee; Charles E. Brokaw, Denver, regional director of the Department of Commerce, and Glen J. Hopkins, Kansas City, head of the Missouri basin office of the United States Public Health service, the Federal Security agency.

One point discussed by General Shingler was the flood threat posed by a snow cover 20 in. deep over large parts of North and South Dakota. This snow, he said, has an unusually large moisture content averaging about 5 in., and is underlaid by ice which may block infiltration of melting snow into the ground.

It was pointed out that the $42-million Kansas City, Mo., and Kan., levees project is more than 60 percent completed. Upstream storage dams needed to go with the levees have not been started.

The flood last July covered 950,000 acres, including 825,000 acres of cropland, with damages estimated at $112 million dollars.

Today, however, a $4,265,000 farm levee repair program is 90 percent completed and will be finished by next April 15, Colonel Lincoln said.

Camp questions water as best fluoride medium

Speaking at the recent meeting of the New England Water Works Association in Boston, Thomas R. Camp,

of Camp, Dresser and McKee voiced this question:

Is water or milk the optimum vehicle for fluoridation?

Mr. Camp was echoing thoughts previously expressed by his affiliate, J. E. McKee, of Pasadena, Calif. The point of his remarks was claimed to be stimulation of further research into the question; it was not a firm indorsement of milk fluoridation.

CALENDAR

Earthmoving Industry Conference, Pere Marquette Hotel, Peoria, Ill., April 9-10.

Symposium on "Airfield Pavements for Jet Aircraft," U. S. Naval C. E. Research and Evaluation Laboratory, Port Hueneme, Calif., April 17-18.

California section, American Water Works Association, spring meeting, The Ahwahnee, Yosemite National Park, Calif., April 18.

Concrete Reinforcing Steel Institute, The Greenbrier, White Sulphur Springs, W. Va., April 28-May 3.

American Water Works Association, Municipal Auditorium, Kansas City, Mo., May 4-9.

Highway Transportation Congress, National Highway Users Conference, Mayflower Hotel, Washington, D. C., May 6-8.

Missouri Basin Inter-Agency committee, Pierre, S. D., May 7-8.

Industrial Wastes Conference, Purdue Memorial Union, Lafayette, Ind., May 7-9.

First World Conference, International Road Federation, Washington, D. C., May 8.

Society for Experimental Stress Analysis, Hotel Lincoln, Indianapolis, Ind., May 14-16.

U. S. Conference of Mayors, Waldorf Astoria Hotel, New York City, May 15-17.

National Public Health Engineering Conference, annual meeting, University of Florida, Gainesville, May 20-21.

Western Association of State Highway Officials, Olympic Hotel, Seattle, Wash., June 5-7.

Hydraulics Conference, State University of Iowa, Iowa City, Iowa, June 9-11.

International Organization for Standardization, tri-ennial meeting, Columbia University, N. Y. City, June 9-11.

Conference on Soil Stabilization, M.I.T., Cambridge, Mass., June 18-20.

American Society for Engineering Education, Dartmouth College, Hanover, N. H., June 22-27.

Forest Products Research Society, annual meeting, Milwaukee, Wis., June 23-25.

American Society for Testing Materials, 50th anniversary meeting, Hotel Statler, N. Y. City, June 23-27.

American Institute of Architects, Waldorf-Astoria Hotel, N. Y. City, June 24-27.

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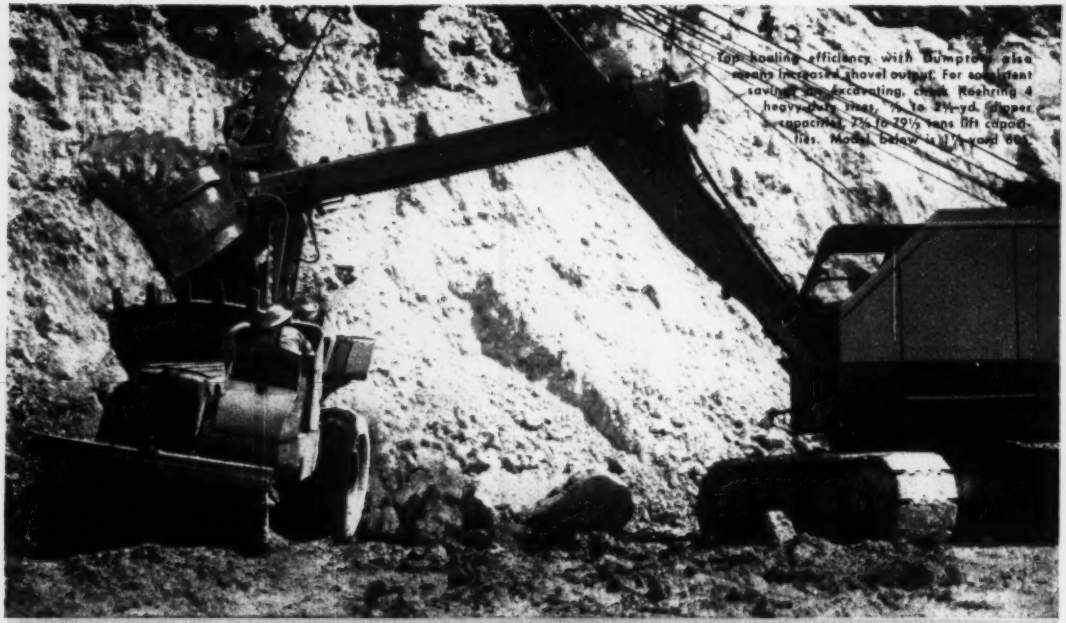

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OBITUARIES

Harris & Ewing photo

Algernon Blair, 78, Montgomery, Ala., contractor and civic leader, died at Boston, Mass., March 14. He started business at Columbus, Ga., and it developed until at one time as many as 6,000 persons were employed. He did much government construction including post office and veterans hospitals. He did $63 million worth of work in the second world war—emergency defense works, Army camps, airfields and naval installations. One of his larger contracts was the $13,876,390 Coosa River Ordnance Plant at Talladega, Ala., in 1940.

Julian Frank, 51, a civil engineer in the Chicago department of subways and superhighways, died March 17 in Louisville, Ky. He had been a Chicago city employee for 14 years.

Richard C. Sandlass, Baltimore, Md., structural steel designer, died March 19. He designed the steel skeleton of the old and present Fifth Regiment Armory, Eastern High School, and the Masonic Home in Catonsville, Md. He was a former chief engineer and general manager of the Chesapeake Iron Works and later established his own consultant engineering firm. He worked on buildings at the United States Military Academy, West Point.

Edward Stonestreet Dawson, 70, a civil engineer and a Washington, D. C., claims inspector for 34 years, died March 19.

Arthur Yale Warren, 81, Massachusetts state highway official, died March 20. For 36 years he was chief engineer of state departments, first as New Hampshire state highway chief engineer, and later as a member of the Massachusetts State Highway Commission, the Department of Public Works and the state planning board.

George L. Nicolson, 88, civil engineer and manager of the Chesapeake & Ohio Canal for 40 years until it was bought by the government in 1940, died March 22 in Washington, D. C. He was graduated from Virginia Military Institute in 1885 and went to Washington in 1888.

Thomas E. Hibben, 59, civil engineer and chief of the United Nations' Technical Assistance Division in Pakistan for the last 15 months, died March 19 in Karachi. He went to Washington, in the early 1930's to serve as chief engineer in an emergency reconstruction program. Later, he became a co-director of a section of the Resettlement Administration. He was interested in low-cost housing and was an authority on rammed earth construction. During World War II, he was an industrial and construction engineer, in the Bureau of Economic Welfare, and served in the African and Italian campaigns and in Austria.

George D. Fairtrace, 63, city manager of Tylor, Tex., died on March 9. He had served as city manager of Fort Worth, Wichita Falls and Highland Park, and as city engineer of Dallas. He also surveyed the rights of way for several East Texas railways.

Edwin G. Davis, 71, consulting sanitary engineer, died March 10 in Albany, N. Y. Prior to his retirement he held contracts as a consulting sanitary engineer for New York State, and at one time was associated with Pixine Co. of Troy, N. Y.

George W. McNamara, 65, president of McNamara Construction Co., Ltd., Toronto, Ont., died March 10 in Miami, Fla. He started on railway and construction jobs in Sault Ste. Marie, Ont. He went overseas in 1915 and served until the end of the war in France with the 6th Canadian railway troops. He formed the McNamara Construction Co. Ltd. in 1924. The firm in the last few years carried out large contracts in Canada and the United States. When World War II broke out, the company devoted most of its energy to war projects for both Canada and the United States. Since the war it has carried on a number of projects on the Great Lakes and St. Lawrence River.

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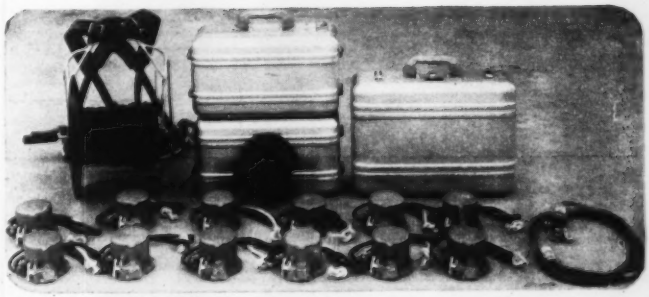

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Bids Asked—Low Bidders—Contracts Awarded—First Section

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ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Charlestown**—STEAM GENERATING EQUIPMENT—B.A. 4/16—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, steam generating equipment, auxiliaries and certain associated equipment, Boston Naval Shipyard, NOY 70908. Spec. 31308. Plans deposit $10. CD 11/2.

BIDS ASKED—BUILDINGS

▲ **Mass., Boston**—PHYSICAL EDUCATION CENTER—Bids Asked—Northeastern University, 360 Huntington Ave., physical education center, $1,000,000. Coolidge, Shepley, Bulfinch & Abbott, 1 Court St., archts. CD 1/26/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Groisser & Shlager Iron Works, 84 Washington St., Somerville, Mass. LB $1,603,817, est. $1,500,000. Contr. C-2A steel superstructure for elevated hy. structures, portion J. F. Fitzgerald Expressway, Boston. Bids Mar. 18. CD 2/20.

▲ **RHODE ISLAND**—State Hy. Dpt., State House, Providence. M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB $1,691,727, 2 separate two-lane roadways, bridges, viaducts, etc. RI Contr. 5207-FA Proj. No. UI-50 (3), Cranston and Warwick. Bids Mar. 19. CD 3/5.

RHODE ISLAND—State Hy. Dpt., State House, Providence, S. & M. Constr. Co., 30 Salmon St., Providence, R. I., CA. $599,244, Noosenneck Hill Rd. extens. RI Contr. 5203, FA Proj. No. FI-QL (2), Richmond. Bids Mar. 5. CD 3/14 under LB.

† **A. J. Halloran**, 1 Washington St., Providence, R. I. LB $887,000, general storehouse, Naval Air Station, NOY 29605. Spec. 31259. QUONSET POINT, R. I. Pub. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids Mar. 18. CD 2/25.

BUILDINGS

LOW BIDS AND CONTRACTS

Rich Bros., Constr. Co., 410 Park Square Bldg., Boston, Mass. CA $667,657, est. $650,000. elementary SCHOOL, Elihu Greenwood Dist., Hyde Park, BOSTON, Mass. City, Dept. School Bldgs., 26 Norman St., Boston, Mass. Bids Feb. 27, awarded Mar. 21. CD 3/6 under LB.

▲ **A. Cefalo & Sons, Inc.**, 42 Bennett St., Lynn, Mass. LB $2,114,000. HOUSING Proj. PHA Mass 23-2, Adams and Lafayette Sts., LYNN, MASS. Lynn Housing Auth., 58 Andrews St., Lynn, Mass. Bids Mar. 12. CD 3/7.

▲ **Construction Units, Inc.**, 199 Washington St., Boston, Mass. LB $1,492,490, HOUSING, Proj. PHA 15-1, Willis Ave., South Medford, MEDFORD, MASS. Medford Housing Auth., City Hall, Medford, Mass. Bids Mar. 20. CD 3/11.

▲ **Bossi Constr. Inc.**, 43 Leon St., Boston, Mass. CA $1,552,955, est. $1,650,000. HIGH SCHOOL Pleasant St., METHUEN, MASS. Town, High School Bldg. Comm., Methuen, Mass. CD 3/10 under LB.

Grande & Sons, Inc., 425 A Broadway, Everett, Mass. LB $951,143, est $825,000. HIGH SCHOOL remodeling incl. 2 wings, SCITUATE, MASS. Town, School Dpt., Scituate, Mass. Bids Mar. 20. CD 3/4.

▲ **Farina Bros. Co.**, 429 Watertown St., Newton, Mass. CA $6,375,000, est. $6,000,000. P-104 Contr. 3, state PRISON, NORFOLK, MASS. State, Dpt. Correction, State House, Boston, Mass. Bids Mar. 14. Awarded Mar. 19. CD 3/18 under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Md., Annapolis**—B.A. 4/8—P. Wks. Office, U. S. Naval Academy, Annapolis, shore protection, reshaping approx. 1,125 ft. existing earth-filled dike, removing, placing existing riprap, earthwork, seeding, U. S. Naval Engineering Experiment Station, Spec. 33927. Plans deposit $10. CD 2/25 under Public Bldgs.

N. J., North Haledon—B.A. 4/10—N. J. State Bd. Education Hunziker Hall, Paterson State Teachers College, N. Haledon sewer elector station on North Haledon campus of Paterson State Teachers College. Plans deposit $25. Lawrence C. Licht, 19 Knickerbocker Rd., Englewood, N. J., archt.

N. Y., Jones Beach—B.A. 4/11—Jones Beach State Parkway Auth., Babylon, water supply extens. for Marine Stadium, Jones Beach State Park. CD 11/22/44.

Pa., Catawissa—B.A. 4/17—At office H. O. Sharpless, Secy., Municipal Sewer Auth. of Catawissa Boro, 483 Mill St., Cont. 1, general const., sewage treatment plant and intercepting sewers. Plans deposit $25; Cont. 2, electrical work and Cont. 3, plumbing for sewage treatment plant. Plans deposit $10 each. Gannett Fleming, Corddry & Carpenter, Inc., 600 N. Second St., Harrisburg, engr.

BIDS ASKED—BUILDINGS

† **Md., Bainbridge**—GAS STORAGE BLDG.—B.A. 4/15—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., gas storage bldg. U. S. Naval Hospital, NOY 70259, Spec. 32533. Plans deposit $10. CD 2/1.

N. Y., Potsdam—HEATING PLANT—B.A. 4/16—Bureau Contracts & Accounts, Albany, heating plant Bldg. No. 13, at State Teachers College. Plans deposit $30. CD 7/6/45.

Pa., Falisington—SCHOOL—B.A. 4/24—Falls Twp. School Auth., Falisington Elementary School, Yardley Rd., 22-room elementary school for Fairless Hills Sect. of township on U. S. Rte. 1 (Lincoln Hy.) at Oxford Valley Rd., $750,000. Plans deposit $25. Mickle-wright & Mountford, 72 Ewing St., Trenton, N. J., archts. CD 9/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor, Alfred E. Smith State Office Bldg., Albany, **Brunalli Const. Co.**, Southington, Conn., LB $1,058,585, construct five highway grade separation structures and a relocated town highway, Madison Co. Bids Mar. 19. CD 3/3 under Streets and Roads.

A. S. Wikstrom, Inc., Box 217, Skaneateles, N. Y., LB $717,960, relocation sect. of the canalized Mohawk River Channel to provide for the construction of the Mohawk Thruway, west of Mohawk St., Herkimer Co., NEW YORK. Bureau Contracts & Accounts, The Governor, Alfred E. Smith Office Bldg., Albany, N. Y. Bids Mar. 19. CD 3/3.

▲ **American Bridge Co.**, 71 Broadway, New York 6, N. Y. CA. Approx. $4,000,000. HANGAR.

Wortmann & Sons, 109 E. 29 St., New York 19, N. Y. CA. Approx. $600,000. Emergency cargo bldg. both at New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. CD 4/27/44 and 2/28.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Paul Tishman Co. Inc.**, 21 E. 70 St., New York 21, N. Y. CA. Approx. $3,500,000. Five 6-story bldgs. for 368 families, HOUSING on site bounded by Kissena Blvd., 71 Ave., 164 St., and 65 Ave., Second sect. of $20,000,000 project, FLUSHING, N. Y. Local 3, International Brotherhood of Electrical Workers, 130 E. 25 St., New York 10, N. Y. CD 5/20/49.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

The Fatzler Co., Inc., 653 S. 15 St., Newark, N. J., CA, $500,000, 1 story LABORATORY, Watchung and Lakeside Ave., WEST ORANGE, N. J. Thomas A. Edison, Inc., 51 Lakeside Ave., West Orange, N. J. Harbeson, Hough, Livingston & Larson, Architects Bldg., Phila., Pa., archts.

Baton Constr. Corp., 1616 Sansom St., Phila., Pa., LB $446,000, Sharp HALL, NEWARK, DEL. University of Delaware, Newark, Del. Bids Mar. 6. CD 2/14

William H. Parson, Seaford, Del., Separate Contracts, $100,000, 1 story, 60x300 ft., block, steel, concrete WAREHOUSE, SEAFORD, DEL.

J. Frank Darling, Wawaset Apartments, Wilmington, Del. Separate Contracts, $300,000, RESIDENTIAL DEVELOPMENT, Franklin St., WILMINGTON, DEL.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Fla., Fort Lauderdale—B.A. 4/22—City Comn., City Comn. Chambers, Fort Lauderdale, laying 8 to 42-in. raw watermains; ten gravel barrel wells and pumping station. Plans deposit $25 each. H. M. Link, city engr. adv. ENR 3/27.

† **Fla., Eglin Air Force Base**—ADMINISTRATION—B.A. 4/24—U. S. Eng., P.O. Box 1169, Mobile 7, Ala., administration bldgs., warehouses and shops at Auxiliary Field No. 3, ENG 01-076-52-60. Plans deposit $20. CD 2/26/51.

BIDS ASKED—BUILDINGS

Va., Norfolk—Y. W. C. A. BLDG—B.A. 4/8—Young Womens Christian Assoc., 253 Freemason St., Y. W. C. A. bldg. A. Ray Pentecost, Colonial Ave. and 21 St., archt.

Fla., Clearwater—CHURCH—B.A. 4/10—First Methodist Church c/o Roy W. Wakeling, 425 S. Garden Ave., church.

Fla., Fort Lauderdale—HOSPITAL—B.A. 4/10—Bd. Comrs., Broward Co., Ft. Lauderdale, South Broward Hospital. Plans deposit $50. Moeller & Moberg, Hollywood, Fla., archts.

Ga., Augusta—SCHOOL—B.A. 4/10—Richmond Co. Bd. Educ., 422 7 Av., Augusta, Wheless Rd. School. Plans deposit $50. Scroggs & Ewing, 1331 Green St., Augusta, Ga., archts. CD 2/28.

▲ **Tenn., Knoxville**—STUDENT-FACULTY CENTER—B.A. 4/15—University of Tennessee, Administration Bldg., student-faculty center, $1,300,000. Bid date changed. Barber & McMurry, 2505 Kingston Pike, N.W., archts. CD 12/13.

SOON LETS CONTRACT—BUILDINGS

La., Shreveport—CHURCH—St. Mark's Episcopal Church, c/o Anran & Gilmer, archts., 524½ Market St., soon lets contract, church, $750,000. CD 2/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WEST VIRGINIA—State Hy. Comn., Charleston,
Smith Constr. Co., Huntington, W. Va., CA, $952,159 wid'n. U.S. Route 60, incl. wid'n. 1.498 mi. extending present four-lane road from Huntington to Barboursville; wid'n 3.48 mi. same hy. from Barboursville to Blue Sulphur Springs, by 20 to 25 ft. Cabell Co.

▲† **Blythe Bros.**, 2911 Hutchinson Ave., Charlotte, N. C., LB $2,791,339, railroad spur from Camp Lejune to Cherry Point, NOY 70863. Spec. 32219. CAMP LEJUNE, N. C. P. Wks. Office, Marine Barracks, Camp Lejune, N. C. Bids Mar. 14. CD 2/28.

† **Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md., LB $314,314, maintenance dredging, Charleston Harbor, Charleston Co. 38-081-52-9, SOUTH CAROLINA. U. S. Eng., Custom House, Charleston, S. C. Bids Mar. 19. CD 2/27.

† **U. S. Eng.**, 33 Custom House, Charleston, S. C. rejected bids, maintenance dredging in entrance channel, Georgetown Harbor, Georgetown Co., Eng. 38-081-52-10, SOUTH CAROLINA. LB $748,980. CD 3/18, under LB.

Chicago Bridge & Iron Co., Forsyth St., Atlanta, Ga., LB $137,000, Reservoir No. 1, MIAMI BEACH, FLA. City, City Hall, Miami Beach, Fla. 2 Bids Mar. 17. CD 2/27.

Blythe Bros. Co., 2911 Hutchinson Ave., Charlotte, N. C., CA, $399,000, 36-in. water line from New Merkle to Shades Mountain Filter Plant, BIRMINGHAM, ALA. City, City Hall, Birmingham, Ala.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson.

J. W. Snowden, Hattiesburg, Miss. CA $364,664, est. $340,000. Underpass 0.402 mi., Lakeland Dr. on U. S. Hy. 51, between Jackson and Ridgeland, Proj. UI-300 (2), Hinds Co.

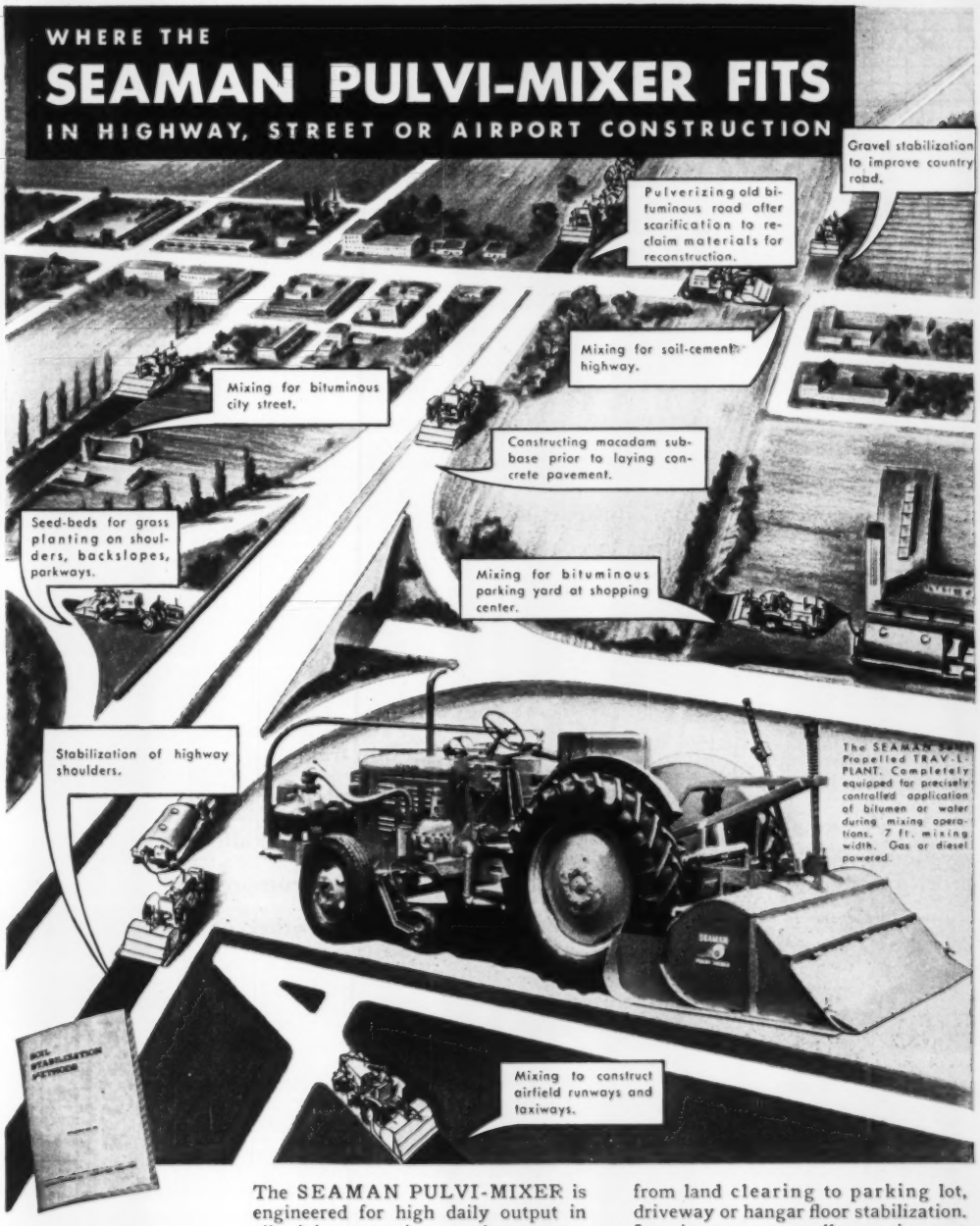
John H. Moon & Son, Port Gibson, Miss. CA $280,157, est. $270,000. Approach spans 0.085 mi. to Yazoo River Bridge at Greenwood, Proj. U-008-5 (3), Leflore Co. Bids Mar. 19. CD 3/7.

(Continued on page 101)

WHERE THE

SEAMAN PULVI-MIXER FITS

IN HIGHWAY, STREET OR AIRPORT CONSTRUCTION


Gravel stabilization to improve country road.
Pulverizing old bituminous road after scarification to reclaim materials for reconstruction.
Mixing for soil-cement highway.
Mixing for bituminous city street.
Constructing macadam subbase prior to laying concrete pavement.
Seed-beds for grass planting on shoulders, backslopes, parkways.
Mixing for bituminous parking yard at shopping center.
Stabilization of highway shoulders.
The SEAMAN Self-Propelled TRAV-L-PLANT. Completely equipped for precisely controlled application of bitumen or water during mixing operations. 7 ft. mixing width. Gas or diesel powered.
SOIL STABILIZATION METHODS
Mixing to construct airfield runways and taxiways.

This **FREE** book, SOIL STABILIZATION METHODS, modern in every respect, compiled by SEAMAN engineers, gives you complete information on processing methods and on the many uses for the SEAMAN. Ask for Bulletin 25.

The SEAMAN PULVI-MIXER is engineered for high daily output in all mixing operations on the most extensive stabilized construction projects — utilizing any type of binder with any suitable aggregate or soil. In addition, the SEAMAN is profitable in a variety of work that ranges from land clearing to parking lot, driveway or hangar floor stabilization. Low investment, small operating cost and high maneuverability are the reasons for such versatility.

Glance at the applications shown above. Then—put a SEAMAN in your road or street construction plans.

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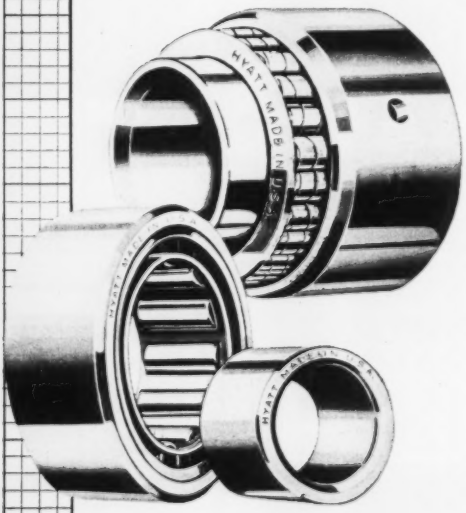

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HYATT ROLLER BEARINGS

(Continued from page 98)

Mississippi—State Hy. Dpt., T. C. Robbins, dir., Jackson, rejected bids Mar. 18. single bit. surf. tr. 7.336 mi. Miss. Hy. 7 between Greenwood and Holcomb, Proj. F 019-1 (1), Lefore and Carroll Counties, est. $111,000; action deferred bids Mar. 18, grading, culvert, bridges 10.988 mi. U. S. Hy. 90 beween Pasagoula and Mississippi-Alabama State line, Proj. FI 003-1 (5), Jackson Co., est. $805,000. CD 3/7.

MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson.

J. B. Michael & Co., Inc., 1021 Heywood St., Memphis, Tenn. 2 CA $446,540, est. $468,000. incidental grading, sand asph. conc. 16.554 mi. on Miss. Hy. No. 1 between Clarksdale and Rosedale, Proj. F 043-3 (2), Coahoma Co.

Linwood Smith, Lake Village, Ark. CA $176,685, est. $190,000. Incidental grading, base course bit. surf. tr. 8.045 mi. Miss Hy. 7 between Belzoni and Swifton, Proj. S 141 (4), Humphreys and Leflore Counties; CA $82,764, est. $90,000. Incidental grading, double bit. surf. tr. 9.575 mi. Miss. Hy. 20 between Georgetown and Pinola, Proj. F 013-2 (5), Simpson Co.

Cobb Brothers Constr. Co., Citizen Bank Bldg., Meridian, Miss. CA $98,194, est. $98,000. Incidental grading, double bit. surf. tr. 11.963 mi. on Miss. Hy. 18 between Hermanville and Carpenter, Proj. F 039-1 (2), Claiborne and Copiah Counties.

Pigford Bros. Constr. Co., Hy. 11 S., Meridian, Miss. CA $83,388, est. $91,000. Grav. surf. course, bridges 2.124 mi. Miss. Hy. 30 between New Albany and Oxford, Proj. F 044-1 (6), Union Co.

Hamilton & Rowell Constr. Co., Inc., Brookhaven, Miss. CA $97,770, est. $108,000. Temporary grav. surf., culverts 6.43 mi. Miss. Hy. 494 between Little Rock and Schamberville, Proj. S 442-1 (1), Newton Co. Grand total $985,251. Bids Mar. 18. CD 3/7.

† **U. S. Eng.**, 606 Santa Fe Bldg., Galveston, Tex. cancelled bids to have been opened Mar. 25. 86,000 sq. ft. steel hangar, Lake Charles Air Force Base, ENG 41-243-52-6, LAKE CHARLES, LA. CD 3/10.

Preload Constr. Co., 211 E. 37 St., New York, N. Y. CA $175,000. 5,000,000 gal. concrete water tank in Church Hill area, RICHMOND, KY. City, Richmond, Ky.

BUILDINGS

LOW BIDS AND CONTRACTS

Kenhill Constr. Co., 215 Sheridan Circle, Charleston, W. Va., CA, $450,000, HOSPITAL ADDNS., CHARLESTON, W. VA. Charleston Memorial Hospital, Charleston, W. Va.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C., CA, $5,442,000, HOUSING units, CHARLESTON, W. VA. Charleston Housing Auth., 1809 Washington St. W., Charleston, W. Va. Bids Mar. 7. CD 2/6.

† **U. S. Eng.**, Foot of Front St., Norfolk, Va. postponed project indefinitely, SHOP, STORAGE, SCHOOL, ADMINISTRATION facilities and BOQ's. Inv. 52-15, FORT EUSTIS, VA. CD 2/29.

Wilson Const. Co., Radford, Va., CA, $461,490, Honaker HIGH SCHOOL, LEBANON, VA. Russell Co. Bd. Educ., Lebanon, Va. Bids Mar. 17. Awarded Mar. 17. CD 2/13.

Construction Associates, Inc., 803 Crawford St., Norfolk, VA., CA, Approx. $300,000. RESIDENCES, NORFOLK, VA. Louis G. Baugher, c/o contractor.

Duke Const. Corp., 424 Dinwiddie St., Norfolk, Va., CA, Approx. $350,000. APARTMENT development on NR Military Hy., NORFOLK, VA. Lakeland Apartments, Inc., c/o contractor.

▲ **Housing Engineering Co.**, 217 E. Baltimore St., Baltimore, Md., LB $2,836,000, construct, manage, finance 400 Wherry Act HOUSING units in Camp Allen area for personnel of Naval Base;

Norman Flax Funding Co., 150-34 Queens Blvd., Kew Gardens, N. Y., LB $2,788,889, construct, manage, finance 400 Wherry Act Housing units for personnel of Little Creek Amphibious Base, NORFOLK, VA. Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Mar. 13. CD 2/19.

Park Manor Heath, Inc., Elm Lane, Norfolk, Va. Owner builds. Approx. $350,000. RESIDENCES, NORFOLK, VA.

W. Marshall Moore, 2828 S. Boulevard St., Charlotte, N. C. Owner Builds. Approx. $100,000. mfg. PLANT for lease to Piedmont Carton Co., CHARLOTTE, N. C. CD 2/25/46.

Akers Motor Lines, Gastonia, N. C., Owner Builds. Approx. $100,000. rebuild truck freight TERMINAL, GASTONIA, N. C. James C. Wise, 305 Techwood Dr., Atlanta, Ga., archt. CD 12/28.

Weller & Ozier, Sanford, Fla., CA, $432,940. HOUSING Projects Fla 19-1 and Fla 19-2, COCOA, FLA. Cocoa Housing Auth., Cocoa, Fla. Bids Mar. 18. CD 2/27.

Arthur Perry, 1746 E. Adams St., Jacksonville, Fla., LB $321,740, GYMNASIUM at Florida School for Deaf and Blind, ST. AUGUSTINE, FLA. State Bd. Control Education Bldg., Florida State University, Tallahassee, Fla. CD 1/23/47.

▲ **C. A. Fielland, Inc.**, 107 N. Rome Ave., Tampa, Fla., CA, $3,019,862, HOUSING, Project Fla 3-9 TAMPA, FLA. Tampa Housing Auth., 511 S. Morgan St., Tampa, Fla. Bids Mar. 19. CD 2/8.

▲ **Gulf Naval Stores Co.**, c/o L. L. Latmer, Andalusia, Ala., Owner Builds, $1,815,000, FACTORY, ANDALUSIA, ALA. CD 8/51.

▲ **Charles S. Frazier**, Selma, Ala., Owner Builds, $2,000,000 HOUSING units, SELMA, ALA.

Myers & Quinn, Columbus, Miss. LB $138,000. FACTORY, MACON, MISS. City, Macon, Miss. Bids Mar. 7. CD 2/26.

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GEOLOGICAL INVESTIGATIONS

R. P. Farnsworth & Co., Inc., Box 2029, Baton Rouge, La. LB $800,019. 190 DWELLING units, 4 laundry SHOPS, ADMINISTRATION and MAINTENANCE BLDG., outside utilities, CAMP POLK, LA. Pub. Housing Admin., Housing & Home Finance Agency, 812 T & P. Passenger Bldg., Fort Worth, Tex. Bids Mar. 18. CD 3/7.

R. P. Farnsworth & Co., Inc., 1515 S. Salcedo St., New Orleans, La. CA $887,086. McDonogh No. 36 Uptown Negro Elementary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. CD 3/10 under LB.

R. C. Constr. Co., 3629 S. Carrollton Ave., New Orleans, La. Owner Builds. $350,000. RESIDENTIAL DEVELOPMENT, NEW ORLEANS, LA.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Wis., Milwaukee—OFFICE—B.A. 4/11—Square D Co., 4041 N. Richards St., Zone 12, 7 story, 80x240 ft., concrete, steel, brick, stone office addn. $600,000. Grassold & Johnson, 734 N. Jefferson St., Zone 2, archts. CD 9/20

Wis., Racine—Y.W.C.A. BLDG.—Bids Asked—Young Women's Christian Assn., 312 7 St., 2 story, bsmt., 120x160 ft. concrete, brick, stone YWCA Bldg. $613,-100. Fitzhugh Scott & Fitzhugh Scott Jr., 5623 N. Lake Dr., Milwaukee, Zone 11, archts. CD 2/15

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

OHIO—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15.

D. R. Smalley & Sons, Inc., 426 Market St., Celina, O., CA $648,098, est. $772,850. Type T-71 and two structures of steel and concrete, S. R. 73 at Waynesville, Warren Co. Bids Mar. 11. CD 3/18 under LB.

† Markowitz Bros. Inc., 5600 N.E. 4 Ave., Miami, Fla., CA $896,915, pump house, addnl. fuel piping sys., water supply sys., and underground storage tanks, Lockbourne Air Force Base, Eng. 46-022-52-101, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Mar. 4, awarded Mar. 19. CD 1/24.

Triangle Constr. Co., Kankakee, Ill., LB, $183,000 sanitary sewers in the Sunnyside District, KANKAKEE, ILL. City, City Hall, Kankakee, Ill. Bids Mar. 13. CD 3/5.

Loselle Constr. Co., 1555 Goddard St., Wyandotte, Mich. CA $600,000, c. conc., 200,000 sq. yd. various sections, ALLEN PARK, MICH. Village, R. Don Pretty, clk., Allen Park, Mich. Bids Mar. 11. CD 3/4.

BUILDINGS

LOW BIDS AND CONTRACTS

Leviton Const. Co., Heith Bldg., Dayton, O., CA. Approx. $500,000. 1 story 138x389 ft. 64,000 sq. ft. PARCEL POST annex near Fifth St. and Wayne Ave., to be leased to Postoffice Dept. DAYTON, O. Fannie & Marian Kopelove, c/o contractor. William Leviton, Keight Bldg., Dayton, O., archt. Awarded Feb. 22.

▲† George W. Lathrop & Sons, Inc., 1510 Montcalm St., Toledo, O., CA $1,068,860, one general purpose WARHOUSE, Rossford Ordnance Depot, TOLEDO, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Mar. 5. CD 2/20.

A. Bentley & Sons Co., 201 Belmont St., Toledo, O., LB $598,000, general constr., City HEALTH CENTER, Erie and Orange Sts., TOLEDO, O. City, Arnold V. Finch, city mgr., Safety Bldg., Toledo, O. Bids Mar. 18. CD 1/30.

Alfred A. Smith, 721 E. Saratoga St., Ferndale, Mich. CA $649,600. 2 story, bsmt., brick steel, concrete Alexander Dow Elementary SCHOOL, Pembroke Ave., DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids Mar. 5. CD 2/26.

Leo Kuhlman, Inc., 9716 Connor St., Detroit, Mich. CA $760,000. First unit, 2 story, bsmnt., brick, steel Minnie E. Jefferies Elementary SCHOOL, Beatrice and Leonard Sts., DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids Feb. 28. CD 4/24/51.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Tex., Fort Worth—HYDRANT REFUELING FACILITIES—B.A. 4/10—U. S. Eng., 1127 Texas and Pacific Bldg., hydrant refueling facilities, 6 hydrants, unloading and transfer facilities, 12 underground tanks, pumps, manifold controls and electric facilities, 2 pump houses, rein.-con. const. Tears Engineers, 4617 Cole St., Dallas, engrs. CD 7/19.

Tex., Giddings—B.A. 4/11—City, sanitary sewers, incl. disposal plant, $60,000. Julian Montgomery, 602 West Ave., Austin, engr.

† Ark., Shumaker—STREET LIGHTING—B.A. 4/16—Officer in Charge of Construction, Naval Ammunition Depot, Shumaker, rehabilitation of street lighting in TNT area, Spec. 33270. Plans deposit $10. CD 12/6, under Public Buildings.

Tex., Midland—B.A. 4/16—City, sanitary sewer lines, appurtenances, $60,000. Joe E. Ward, 545 Nacol Bldg., Wichita Falls, engr. CD 10/2/50.

† Missouri—B.A. 4/24—U. S. Eng., P.O. Box 97, Memphis 1, Tenn., 1,050,000 cu. yd. riverside enlargement, roadway embankment, Levee Item No. R-939 and R-936, Beckwith Bend, Levee Stations 55 plus 12, 59 plus 0, 59 plus 0, 63 plus 0 upper St. Francis Levee Dist., Birds Point-New Madrid front levee on right bank of Mississippi River in Mississippi Co. CIVENG 40-041-52-81. CD 6/1/44.

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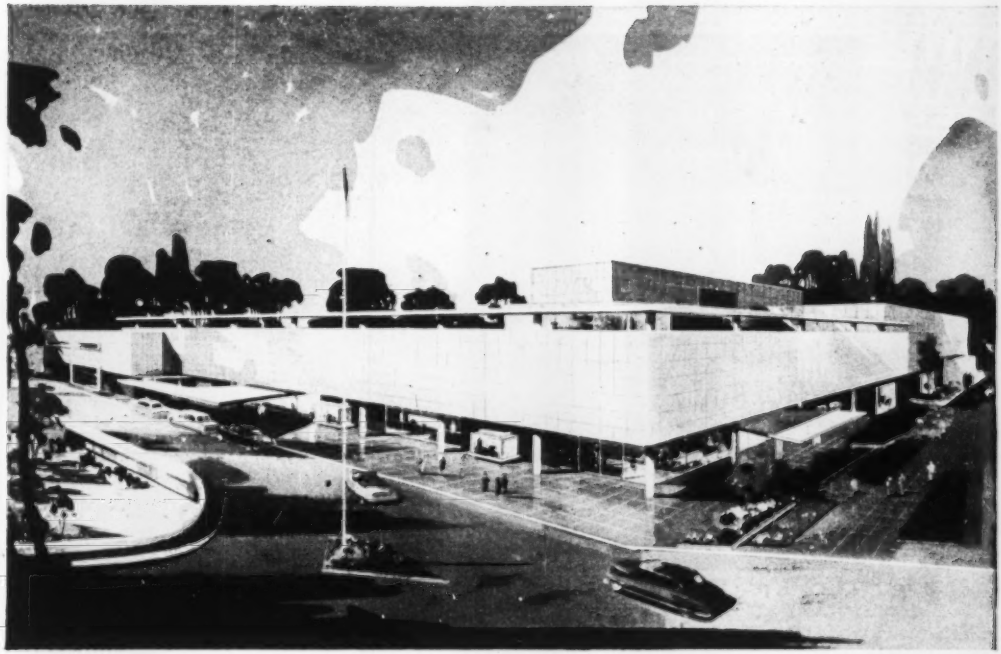

DESIGNER: WILLIAM F. SNAITH OF RAYMOND LOEWY ASSOCIATES
ARCHITECTS: PEREIRA & LUCKMAN AND CHARLES O. MATCHAM
GENERAL CONTRACTOR: THE WILLIAM SIMPSON CONSTRUCTION COMPANY

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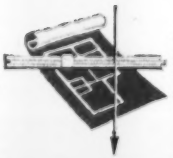

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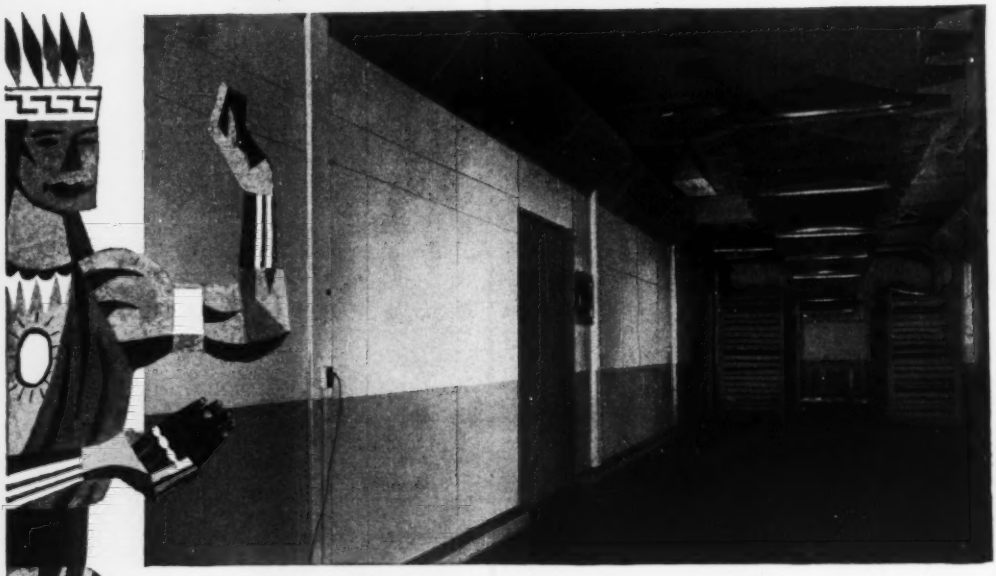

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So when J. P. Weller, D. W. G.'s Master Mechanic, chooses "Century" APAC for the walls of the important Cigar Conditioning Room, you can take his word that APAC is an ideal material where temperature and humidity are accurately controlled.

And because APAC is made of mineral asbestos and portland cement, you know fire can't burn it . . . water can't soak it and termites can't eat it.

You'll find this asbestos-cement structural board gives you as low a first cost and maintenance expense (*never* needs painting!) as any comparable material you can use for interior or exterior walls . . . ceilings . . . partitions . . . and linings.

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(Continued from page 102)

▲ **Tex., Brownsville**—B.A. 4/24—City, City Hall, sewage treatment plant, appurtenances. $1,150,000. Plans deposit $25. Sigler, Clark & Winston, Box 428, Weslaco, engrs. CD 10/8.

BIDS ASKED—BUILDINGS

Tex., Carthage—COURT HOUSE—B.A. 4/15—Panola Co. Comrs. Court, Court House, 2 and 3 story brick, reinf.-con. court house, $500,000. Plans deposit $25. Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, engr.-archt. CD 9/6, under LB.

▲ **Mo., St. Louis**—SCHOOL—B.A. 4/16—St. Louis Archdiocese of Catholic Church, c/o Most Rev. Joseph E. Ritter, archbishop, 3810 Lindell Blvd., Zone 8, (selected list bidders) 1, 2 and 4 story, brick, reinf.-con., steel Bishop DeBourg High School incl. gymnasium-cafeteria bldg., convent, Eichelberger St. between Hampton and Clifton Aves. $2,000,000. Joseph D. Murphy & Eugene J. Mackey, 4746 McPherson Ave., Zone 8, archts. Neal J. Campbell, 911 Locust St., Zone 1, engr. CD 7/10/51.

† **Colorado**—B.A. 4/17—Bureau of Reclamation, Dpt. Interior, Loveland, Colo., completion of Pole Hill Power Plant and Switchyard and Flatiron Power and Pumping Plant and Switchyard, Estes ark-Foothills Power Aqueduct, Colorado-Big Thompson Proj. 14 mi. and 9 mi. respectively west of Loveland, Spec. DC 3691.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Fort Worth**—RELIGIOUS BUILDINGS—Texas Christian University, c/o Dr. M. E. Sadler, pres., T.C.U. Campus, soon lets contract, religious bldgs., 3 story 58x100 ft. brick, tile undergraduate school; 1 story 48x87 ft. chapel and balcony; 3 story 58x100 ft., masonry Brite College. Approx. $1,000,000. Joseph R. Pelich, 1203 Comm. Std. Bldg., archt., Yandell, Cowan & Love, Majestic Bldg., engrs. CD 5/18/51.

Tex., Rockdale—ADMINISTRATION, ETC.—Aluminum Co of America, Rockdale, soon lets contract (1) 2 story 18,000 sq. ft. brick, hollow tile administration bldg.; (2) brick, hollow tile cafeteria, year round air-conditioning for both. Wyatt C. Hedrick, 5201 Fannin St., Houston, archt. for admin. bldg.; Erhart-Eichenbaum-Rausch, 304 Wallace Bldg., Little Rock, Ark., archts for cafeteria.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Asplund Const. Co., Enid, Okla., LB $175,500, est. $180,000. 2 outfall sewers and 2 sewage disposal plants. EDMOND, OKLA., City, City Hall, Edmond, Okla. Bids Mar. 17. CD 2/12.

TEXAS—State Hy. Dpt., State Highway Bldg., Austin.

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB $293,218, Big Cypress Creek Bridge and approaches 0.409 mi. Hy. U. S. 271, approx. 4 mi. south of Mt. Pleasant, Proj. No. F C-248-2 and 1-10 and 11, Camp and Titus Counties.

John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex., LB $108,703, Double Mountain Fork on Brazos River, bridge and approaches 0.936 mi. Hy. U.S. 380, Proj. 298-1-12, Garza Co.;

Austin Bridge Co., P.O. Box 1590, Dallas, Tex., LB $464,460, Brazos River Bridge and superstructure, structure ramp and roadway connection 0.899 mi. Hy. St. 90, Proj. F 1084 (5), Brazos Co. Bids Mar. 18. CD 2/29.

▲† **J. W. Moorman & Son**, Box 491, Snyder, Tex., CA $2,773,043, completion embankment and construct spillway, Belton Dam and Reservoir, Inv. No. CIVENG 41-443-52-37, Bell Co. TEXAS. U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex. Bids Mar. 14. Awarded Mar. 19. CD 3/19 under LB.

City, City Hall, Fort Worth, Tex., Own forces $75,000, addnl. sanitary sewer collection lines, FORT WORTH, TEX. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, Tex. CD 2/4/49.

Jim Wells Co., Court House, Alice, Tex., Own Forces, $100,000, approx. 10 mi. new road const. ALICE, TEX.

Henderson Co., Court House, Athens, Tex., Force Account. Approx. $60,000, some more repairing, reconditioning, surf. of roads in Malakof area, ATHENS, TEX. CD 10/4.

City, City Hall, Fort Worth, Tex., Own Forces, $80,000, some addnl. power pole lines, FORT WORTH, TEX. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, Tex. 9/17.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Own Forces. Approx. $70,000, addnl. new gas distr. mains and service lines, GRAND PRAIRIE, TEX. CD 1/23.

H. B. Zachry Co., Box 2570, San Antonio, Tex., LB $94,963, est. $100,000, 84,500 sq. yds. 5 in. and 25,000 sq. yds. 6 in. soil cement base course for street imprvs., LAREDO, TEX. City, Laredo, Tex. Bids Mar. 18. CD 3/4.

T. F. Jones Const. Co., Littlefield, Tex., LB $99,300, est. $175,000, asph. type street paving, LITTLEFIELD, TEX. Bids Mar. 15.

▲† **C. E. Small and F. S. Oldt**, 403 S. Haskell St., Dallas, Tex., CA, $1,799,943, ten, 270,000 sq. ft. airmen's barracks, Inv. No. Eng 41-443-52-16, MINERAL WELLS, TEX. U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex., Bids Feb. 14. CD 2/19 under LB.

Lamar Co., Court House, Paris, Tex., Own Forces. Approx $65,000, repairing, imprv., drainage, surf. approx. 19 mi. roads, PARIS, TEX. CD 5/24/49.

Martin County Const. Co., Stanton, Tex., Purchase and Hire. Approx. $35,000, c.i. water lines, STANTON, TEX.

Martin County Const. Co., Stanton, Tex., Purchase and Hire. Approx. $62,000, sanitary sewers, STANTON, TEX.

Martin County Const. Co., Stanton, Tex., Purchase and Hire. $40,000, site earthwork, grading, leveling, open drainage, STANTON, TEX.

Martin County Const. Co., Stanton, Tex., Purchase and Hire. $63,335, street const., grading, asph. surf. STANTON, TEX.

† **Nolan Brothers, Inc.**, 1210 Builders Exchange, Minneapolis, Minn., CA, $509,600, 105,000 sq. ft. steel or glued laminated frame, masonry base warehousing, steam, gas-fired heating, etc. Eng 41-443-52-22, Connally Air Force Base, WACO, TEX. CD 3/11 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **E. A. Brunson Constr. Co.**, 4052 Forest Park Ave., St. Louis 8, Mo. CA $1,204,893, general contract, brick, concrete, steel HIGH SCHOOL, Topton Way south of Maryland Ave., CLAYTON (ST. LOUIS 5 P. O.), MO. School Dist. of Clayton, Bd. Educ., John J. Bracken, supt. Schools, 7500 Maryland Ave., Clayton 5, Mo. CD 3/7 under LB.

† **Baumann Constr. Co.**, 713 E. Austin St., Nevada, Mo. LB $336,950, alterations 11 mobilization type bachelor OFFICERS QUARTERS type BOQ-40 and 1 type CWH-57, Inv. No. W23-037-52-78, FORT LEONARD WOOD, MO. Dpt. Army, c/o Post Engineer, Bldg. 2200, Fort Leonard Wood, Mo. Bids Mar. 10. CD 2/27.

▲ **S. Patti Constr. Co.**, 1340 Admiral Blvd., Kansas City 6, Mo. LB $3,360,000. Theron B. Watkins Negro HOUSING, incl. thirteen 2 story frame buildings, twenty-six 3 story concrete buildings, 462 housing units, KANSAS CITY, MO. Kansas City Housing Auth., c/o Paul McCauley, exec. secy, City Hall, Kansas City 6, Mo. Bids Mar. 20. CD 3/6.

▲† **Tankersley Constr. Co.**, First Natl. Bank Bldg., Oklahoma City, Okla., CA, $2,563,000, 20-53 explosive MAGAZINES, Naval Ammunition Depot, Cont. NOY 70830, McALESTER, OKLA. Dpt. Navy, Officer in Charge of Construction, Eighth Naval Dist., Bldg. 16, Naval Station, New Orleans, La. Bids Mar. 6. CD 3/14 under LB.

A. J. Whipple, R. F. Jordan and Comer Burton, General Delivery, Angleton, Tex. Owner Builds. $368,000, 45 single family and duplexes DWELLING units, ANGLETON, TEX. CD 6/26.

John F. Shawhein Distribution Co., 400 Blk. E. Leuda St., Fort Worth, Tex. Own Forces. Approx. $88,000. WAREHOUSE, FORT WORTH, TEX.

Shiner Electric Co., 408 E. First St., Fort Worth, Tex., LB $172,550, est. $200,000, modernization of electric facilities at Consair PLANT, FORT WORTH, TEX. Consolidated-Vultee Aircraft Corp., Grants Line, Fort Worth, Tex. CD 2/13.

John Potter Const. Co., 1401 W. Lancaster St., Fort Worth, Tex., LB $132,390, est. $250,000, 3 one story rein.-con. SERVICE bldgs. for Heavy Aircraft, FORT WORTH, TEX. Consolated-Vultee Aircraft Corp., Grants Lane, Fort Worth, Tex., Bids Mar. 14. CD 3/13.

J. A. Kelley, 3709 Garnet St., Houston, Tex., Own Forces. $320,000. 8 DWELLINGS, HOUSTON, TEX. CD 3/13.

Akard Beal, 1927 Edmondson St., Houston, Tex., Own forces. Approx. $300,000, HOUSING project, HOUSTON, TEX. CD 2/13.

Carver Estates, Inc., c/o Alex Deutser, 2101 Calumet St., Houston, Tex., Own Forces. $335,000. 60 DWELLINGS in Carver Estates, HOUSTON, TEX. CD 11/20/50.

College Manor Corp., c/o W. J. Settegast, Jr., 1st Natl. Bank Bldg., Houston, Tex. Owner Builds. $335,000. Proj. 4, 40 DWELLING units, HOUSTON, TEX.

▲ **Linbeck Const. Corp.**, Box 13007, Houston, Tex., LB Approx. $2,189,000, est. $2,800,000, 2-story research LABORATORY, HOUSTON, TEX. Humble Oil & Refing Co., Humble Bldg., Houston, Tex. CD 3/14.

O'Rourke Const. Co., Box 7557, Houston, Tex., CA, $189,500, remodeling and addn. to PLANT, HOUSTON, TEX. Wyatt Metal Works & Boiler Works, Washington Ave. and M-K-T Tracks, Houston, Tex. CD 1/21.

▲ **Housing Lighting & Power Co.**, 1016 Walker St., Houston, Tex., Purchase and Hire. $9,000,000, addnl. electric GENERATING UNIT at Greens Bayou Station, 100,000 kw. HOUSTON, TEX. CD 3/28/51.

Carl M. Brown, 1350 Buckner St., Dallas, Tex., Owner Builds. $315,000. 70 HOUSING units, MESQUITE, TEX.

Rex D. Kitchens Const. Co., Box 3006, South Austin Station, Austin, Tex., CA $672,233, 50-bed D.M. Cogdell Memorial HOSPITAL, SNYDER, TEX. Scurry Co., Snyder, Tex. Bids Feb. 28, awarded Mar. 22. CD 3/10 under LB.

Martin County Const. Co., Stanton, Tex., Owner Builds. Approx. $380,000, Proj. 1 38 DWELLINGS, STANTON, TEX. CD 2/29.

Utah Oil Renery Co., Utah Oil Bldg., Salt Lake City, Utah. Owner Builds, $100,000, rebuilding and re-equipping oil PUMPING STATION, GRANGER, WYO. J. E. Mudd, c/o owner, engr.

▲ **N. A. Nelson Constr Co.**, Sheridan, Wyo., LB $1,169,880, 90-bed HOSPITAL, SHERIDAN, WYO. Sheridan Co., Court House, Sheridan, Wyo. Bids Mar. 17. CD 2/5.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Calif., Lathrop**—B.A. 4/11—Sharpe General Depot, Dpt. Army, Lathrop, roadwork, etc. rehabilitate various areas in depot.

Calif., Stockton—B.A. 4/14—San Joaquin Co., Court House, Stockton, road imprvts., Gettysburg Place from Lincoln Village Unit No. 2 to Lincoln Rd.; road imprvts. on Harvey Lane from Jack Tone Rd., east of 1 mile to Tully Road. CD 3/19/45

† **Wash., Spokane**—BASE OPERATIONS—B.A. 4/29—U. S. Engr., City-County Airport, Walla Walla, Wash., base operations bldg. and control tower, Fairchild Air Force Base, Serial No. ENG 45-165-52-24. CD 5/1/51.

† **Oregon**—B.A. 5/1—U.S. Eng., City-County Airport, Walla Walla, Wash., Oregon and Washington shore fishway control equip. McNary Dam, Civeng 45-164-52-80. Extended date. CD 3/5.

BIDS ASKED—BUILDINGS

Wash., Tacoma—SCHOOL—B.A. 4/15—School District 400, 524 Steilacoom Blvd., 212x245 ft., frame, masonry elementary school at Custer south of here, Approx. $300,000. Plans deposit $25. Lea, Pearson & Richards, 729 Tacoma Bldg., Tacoma, archts.

Calif., Mendota—SCHOOL—B.A. 4/16—Mendota Union Elementary School, Mendota, Washington Elementary School. Plans deposit $25. David Horn & Marshall Mortland, 1256 Fulton St., Fresno, archts. CD 3/20.

▲ **Calif., Compton** — SCHOOL — B.A. 4/18 — Compton Union High School Dist., 601 S. Acacia St., 1 story, frame, stucco Centennial High SCHOOL, $1,000,000. Plans deposit $50. Jerome S. DeHetre, 414 N. Burris Ave., Compton, archt. CD 10/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Columbia River Constructors**, c/o Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, LB, $39,749,997, est. $42,775,610, powerhouse, intake structure and appurtenances, for Chief Joseph Dam, Bridgeport, CIVENG 45-108-52-28, WASHINGTON, U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Mar. 19. CD 3/10.

▲ **Kuckenberg Constr. Co.**, 11104 N. E. Holman St., Portland, Ore., LB $4,975,675, 100 m. g. water pipe line from city's WW headworks at Bull Run Lake on slopes of Mt. Hood 25 mi. to a reservoir within the city, PORTLAND, ORE. City, City Hall, Portland, Ore. Bids Mar. 14. CD 2/28.

▲† **Sharp & Fellows Contg. Co.**, 533 Central Bldg., Los Angeles, Calif., CA, $1,100,540, relocaton River Rd., Sycamore Creek Gaging Station, Pine Flat Proj., near Tremmer, Spec. 1618, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Mar. 7, awarded Mar. 18. CD 3/12, under LB.

▲ **CALIFORNIA**—State Div. Hys., P. Wks., Bldg., Sacramento.

Fredrickson & Watson Constr. Co., 873 81 Ave., Oakland, Calif., CA, $1,380,621, road construction, overhead crossing 1.3 mi. between Army and 17 Sts., San Francisco, San Francisco Co. Bids Mar. 12. CD 3/19, under LB.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento.

Clyde W. Wood & Sons, Inc., P. O. Box 620, North Hollywood, Calif., LB, $1,200,699, road constr., wid'n. bridge etc. 3.2 mi. between Gaviota and Gaviota Gorge, Santa Barbara Co.;

▲ **Teichert & Son, Inc.**, P. O. Box 1113 Sacramento, Calif., LB, $122,748, road construction 2.5 mi. between Vacaville and Midway, Solano Co. Bids Mar. 19. CD 2/29.

BUILDINGS

LOW BIDS AND CONTRACTS

Lembke, Clough & King, Box 1391, Las Vegas, Nev., CA. $791,481, est. $874,000. AUDITORIUM at Las Vegas High School, LAS VEGAS, NEV. Las Vegas Union School Dist., 401 S. 9 St., Las Vegas, Nev. Bids Mar. 12. CD 2/21.

E. F. Wapschall, 35 N. Arroyo Parkway, Pasadena, Calif., CA, $523,709, Rio Hondon SCHOOL, EL MONTE, CALIF. El Monte School Dist., 200 S. Lexington St., El Monte, Calif. Bids Feb. 8 awarded Mar. 13. CD 2/21, under LB.

G. O. Gartz Constr. Co., 3908 N. Mission Rd., Los Angeles, Calif., CA $367,000, OFFICE and FACTORY bldg. at 2001 N. Soto St., LOS ANGELES, CALIF. Sherman Paper Products Corp., 1646 N. Spring St., Los Angeles, Calif. Vincent Palmer, 3008 Wilshire Blvd., Los Angeles, Calif., archt.

▲ **R. J. Blanco**, 5173 Overland Ave., Culver City, Calif., CA, Approx. $2,000,000, 259 frame, stucco DWELLINGS in Canoga Park, LOS ANGELES, CALIF. Village Builders Inc., c/o Jack Roberts, 1208 Gould Ave., Hermosa Beach, Calif., archt.

Imperial Associates, 321 S. San Vicente Blvd., Los Angeles, Calif., Owner Builds, $440,000, 44 frame, stucco DWELLINGS ONTARIO, CALIF. Wm. Pearson Jr. Covina, archt.

Biltmore Homes, Inc., 9434 Long Beach Blvd., South Gate, Calif., CA, 81 frame, stucco HOUSES in Tract 1508, SANTA ANA, CALIF. Barhugh Estates Inc., 9434 Long Beach, Blvd., South Gate, Calif. Southwest Drafting Service, 2722 Florence Blvd., Los Angeles, Calif., archt.

Nemec Combustion Eng. Co., 2430 W. Whittier Blvd., Whittier, Calif., Owner Builds, $82,000, 1 story metal SHOP bldg., WHITTIER, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Chippawa—B.A. 4/14—C. H. Ort, clk., Willoughby Twp., R.R. 1., Chippawa, Ont., 105 ft.

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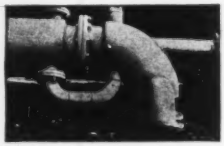

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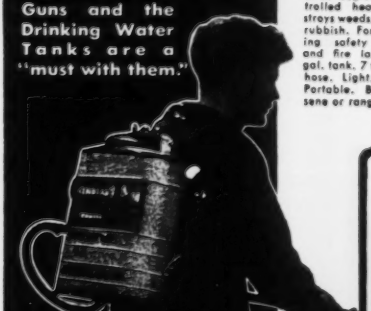

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long 20 ft. wide, concrete bridge, $90,000. R. B. Erwin, 437 Queen St., Niagara Falls, Ont., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

W. H. Cooper Constr. Co., Ltd., 21 Hunter St., East, Hamilton Ont., CA, $44,167, waterworks, pumping station and valve house, HAMILTON, ONT., City, J. F. Berry, clk., City Hall, Hamilton, Ont. Bids Feb. 28, awarded Mar. 18 CD 2/18.

BUILDINGS

LOW BIDS AND CONTRACTS

Acadia Constr. Co. Ltd., Dufferin St., Bridgewater, N. S., CA, $319,750, SCHOOL, KENTVILLE, N. S. Kentville School Board, A. T. MacDonald, secy., Kentville, N. S. Bids Mar. 11, awarded Mar. 17. CD 3/5.

Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Ont., CA $318,700, non-commissioned officers MESS at military base, CAMP BORDEN, ONT. Defense Constr. (1951) Ltd. 441 Queen's Quay W., Toronto, Ont. Awarded Mar. 18 CD 12/28.

Proposed Projects

WATER SUPPLY

Ill., Norridge—Village, 4148 N. Oriole St., pumping station and reservoir, $235,000. Consoer Townsend & Assocs., 351 E. Ohio St., Chicago, 11, Ill., consult. engrs.

Kan., Parsons—City, c/o Dale Raymond, clk., water and sewer line extensions, $300,000, Wilson & Co., 223 N. Santa Fe St., Salina, consult. engrs. CD 12/28/44 under water supply.

Mo., Springfield—City, water sys. imprvs., $850,000.

▲ O., Lorain—City, City Hall, WW imprvs. $1,500,000. Burgess & Niple, 584 E. Broad St., Columbus, engrs. CD 11/13.

O., Toledo—City, Arnold V. Finch, city mgr., City Hall, water-softening facilities, $400,000. Finkbeiner, Pettis & Strout, 518 Jefferson St., consult. engrs. CD 12/21.

▲ Wis., Eau Claire—City, City Hall, water treatment plant, $1,600,000. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

Alaska, Seward—City, City Hall, voted bonds, rehabilitation of water sys. $400,000. F. Nielcheski, city engr. CD 7/30/45.

SEWERS, WASTE DISPOSAL

Calif., Menlo Park—Menlo Park Sanitary Dist., P. O. Box 696, Menlo Park, $300,000 bond election Apr. 22 new sewer construction $300,000

▲ Calif., Santa Ana—Orange County Joint Sanitation Dist., 2104 W. 8 St., Santa Ana, 7,000 ft. long Marine Outfall sewer, $1,878,958. Headman, Ferguson & Carollo, 3308 N. 3 St., Phoenix, Ariz., consult. engrs. Harrison Wooley, Santa Ana, engr.

▲ O., Akron—City, M. L. Davis, Service Dir., City Hall, 2 mill building levy May 6, imprv. city sewer sys. $5,000,000. Luther LaRue, city sewer engr. CD 9/12.

O., Ashtabula—City, City Hall, sewage disposal plant, sidewalks, landscaping, sidewalks, $850,000. Consoer Townsend & Assoc., 351 E. Ohio St., Chicago 11, Ill., consult. engrs. CD 8/8/49.

Ore., Heppner—City, City Hall, sewerage sys., disposal plant, $318,500. Clark & Groff, 3245 S. Commercial St., Salem, engrs. CD 3/22/48.

BRIDGES

▲ NEBRASKA—State Dpt. Roads and Irrigation, Lincoln,

Lancaster Co.—construct "Q" St. viaduct over railroad tracks in Lincoln, $1,500,000. H. L. Aitken, State Engr.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City and County Bldg., Denver, Colo., Street Paving District No. 181, c.conc. curb, gutter and sidewalk, gravel base course, b.conc. paving and necessary incidental imprvts., $200,200. Terry Ownes, city engr.

GEORGIA—State Hy. Dpt., Atlanta, Ga., Floyd Co.—resurfacing 20 miles on State Route 20. Approx. $250,000.

▲ GEORGIA—State Hy. Dpt., 2; Capito, Square, Atlanta, Ga.,

Richmond Co.—Four-lane highway between Augusta and Camp Gordon, $2,500,000.

Ill., Benton—City, City Hall, bond election Apr. 12 paving and c.conc. curbs and gutters for city streets, $290,000.

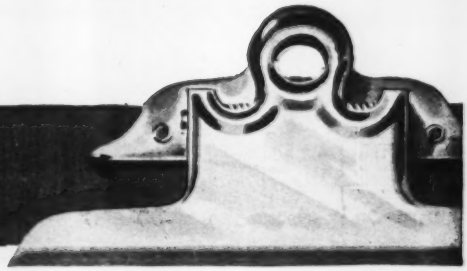
▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Boston-East West Tool Road 150 mi. Boston to N.Y. State line, Rte. Southampton St. and Massachusetts Ave. to American Legion Pkwy. (by-pass Mattapan Square) cross Rte. 1 near Westwood line to Walpole-Medfield - Millis-Holliston-Milford-Northbridge-Sutton - Oxford-Charlton-Sturbridge (Rtes. 15 and 20) Brim-

(Continued on page 109)

In floor fill

in roof fill



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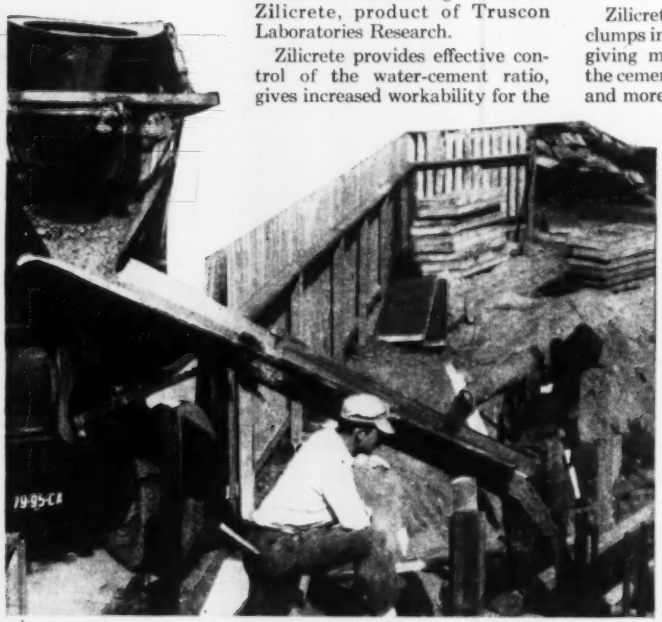
Zilicrete provides effective control of the water-cement ratio, gives increased workability for the same amount of water, or equal workability and greater strength with less water. Saves time and saves money.

Zilicrete breaks up the cement clumps in the mix (deflocculation), giving more complete contact of the cement particles with the water and more complete hydration.



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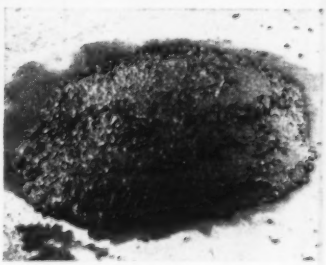

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(Continued from page 106)

field-Palmer-Wilbraham-Ludlow-Chicopee-West Springfield (Rte. 5) (west side Connecticut River) Westfield-Russell (Rte. 202) East Lee to Stockbridge to West Stockbridge (by-passing center of Stockbridge-Berkshire Corner) to N.Y. state line to connect with N.Y. State Throughway south of Albany, $150,000,000.

Mich., Midland—City, city council, bit.-con. paving on various streets, $347,000. CD 3/12/51.

Miss., Jackson—City, 6-lane East-West thoroughfare connecting downtown Jackson with West Jackson, $500,000, Cavallo & Weir, Barnett-Madden Bldg., consult. engrs. CD 9/25/50.

Neb., Rushville—Sheridan Co., Imprv. 23 mi. county road between Ellsworth and Gordon. $400,000.

NORTH CAROLINA—State Hy. and Pub. Wks. Comm., Raleigh, highway from western edge of Spring Hope to Hy. 64. $365,000.

O., Dayton—City, City Hall, pave and construct curbs and gutters on Monument Ave., from Keowee St. to Findlay St. $202,458. John Haie, city engr. CD 11/28/45.

VIRGINIA—State Hy. Dpt., Richmond,

Campbell Co.—expressway through Lynchburg linking North-South Rte. 29 with East-West Rte. 460, Approx. $500,000. Wiley & Wilson, Peoples Bank Bldg., Lynchburg, consult. engrs.

▲ Wash., Everett—City, city Hall, defeated bonds, widn., and paving, Pacific and Walnut Aves. and other streets, $1,000,000. G. G. Paine, city engr. CD 1/3.

Wash., Port Angeles—City, City Hall, voted bonds, paving arterial streets, $625,000. CD 2/11.

EARTHWORK, WATERWAYS

▲† Kentucky—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, Bear Grass Creek pumping station in connection with flood wall. $14,000,000.

AIRPORTS

N. C., Fayetteville — AIRPORT — Fayetteville Airport Comn., c/o Mann & McLawhorn, archts., Greensboro, airport imprvs. at Grannis Field. $260,000.

Tex., Abilene—AIRPORT—City, Abilene, Job No. 1, 5,400 ft. long, 150 ft. wide north-south runway, $175,000; Job No. 2, 3,500 ft. long, 150 ft. wide northwest-southeast runway, $150,000; Job No. 3, 2,400 ft. long northeast-southwest runway, $100,000; Job No. 4, 2 longer runways crushed rock base and 2 in. asph. surf. paved, $125,000; Job No. 5, 2 graded runways, $90,000; Job No. 6, 2 paved aprons, $100,000; Job No. 7, several paved taxiways, $160,000; administration bldg., lighting utilities, clearing, grubbing, sodding, etc., $100,000 for Municipal Airport; Proj. 497 A. Kenneth Etheridge, city engr. CD 11/9.

LATIN AMERICA

▲ Mexico, Mexico City—Aseguradora Anahuac (Jose Lavin) V. Carranza 48, Mexico City, plans 12-story office. $1,000,000.

Mexico, Monterrey—Lock Joint Pipe Co., de Mexico, S. A., Camino de las Minas de Arena 15, Mexico City, plans concrete water pipe factory. $300,000.

Mexico, Tampico—Pan American Airways, Bolivar, 21, Mexico City, plans 200-room hotel. $750,000.

PUBLIC BUILDINGS

Ala., Eufaula—HOSPITAL—Barbour County, Eufaula plans by Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, Ala., hospital, $700,000. CD 12/9/49.

▲ Calif., Fresno—SCHOOL—Fresno City Unified School District, Fresno, plans by Swartz & Hyberg, Roswell Bldg., Fresno, Sequoia Junior High School on Hamilton Ave., $1,220,000.

Calif., Mendota—SCHOOL—Mendota Union Elementary School District, Mendota, plans by David D. Horn & Marshall Mortland, 1256 Fulton St., Fresno, Washington Elementary School, $400,000 McCabe Elementary School, $650,000. CD 10/31/50.

Del., New Castle—SCHOOL—New Castle Special School Dist., New Castle, plans by E. William Martin, 830 West St., Wilmington, school, Leedom Estates Section $500,000. CD 1/2/52.

Del., Wilmington—SCHOOL—Oak Grove School Dist., Oak Grove, Wilmington plans by Stanhope & Manning 902 Orange St., Oak Grove School. $621,600. CD 8/8.

Ga., Eastman—SCHOOLS—Dodge County Bd. Educ., Eastman, White High School and Negro High School $350,000 each.

Ga., Guyton—SCHOOLS—Effingham County Board of Education Guyton, White High School and Negro High School Approx. $300,000 each.

Ind., East Chicago—SCHOOL—School City of East Chicago, 4819 Magoun St., East Chicago, plans by Michael S. Bittner, 721 W. Chicago Ave., East Chicago, Ind., Washington School gymnasium and auditorium, $500,000.

▲ Ind., Hammond—SCHOOL—Bd. School Trustees, G. Gavit Bus. Mgr., Hohman St., Hammond, plans by W. S. Holmes & Co., Old Towers, Lansing, Mich., 2 story, bsmnt., brick junior high school, Wilson School, 1317 173 St., $1,000,000. CD 1/23.

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▲ **Ia., Marshalltown**—SCHOOLS—Bd. of Educ., Marshalltown, voted $875,000 bonds, two schools $1,175,000. CD 11/5.

▲ **Kan., Coffeyville**—SCHOOLS—Bd. Educ., plans by Thos. Williamson and V. H. Loebsack & Assoc., National Bank of Topeka Bldg., Topeka, schools, $1,750,000. CD 2/27.

▲ **Kan., Lawrence**—FIELD HOUSE, etc.—State, Bd. Regents, Topeka, plans by C. L. Marshall, Topeka, field house, armory, $2,500,000; 2 dormitories, $600,000 at University of Kansas.

Kan., Kansas City—SOCIAL AND SCIENTIFIC QUARTERS—University of Kansas, c/o Dr. Edw. H. Hestlinger acting dean, 39 and Rainbow Blvds., social and scientific quarters, University of Kansas Medical Center, $475,000, H. W. Buddenschon, c/o owner, engr.

Kan., Topeka—SCHOOL—Bd Rur.Jt High School Dist. No. 3, voted $400,000 bonds Feb. 28, Washburn Rural High School, Thos Williamson and V. H. Loebsack & Assoc., National Bank of Topeka, Bldg., archts.

Ky., Louisville—SCHOOL—Jefferson Co. Bd. Educ., 618 W. Jefferson St., plans by Fred Hartstein, McDowell Bldg., elementary school, Westport Rd. east of St. Matthews, $400,000, E. R. Ronald & Assoc., 554 S. Third St., consult. engrs. CD 3/20.

▲ **La., Alexandria**—SCHOOL—Rapides Parish School Bd., voted $1,430,000 bonds, school imprvs. in Wards 1 and 9. CD 2/13.

La., Chalmette—SCHOOL—St. Bernard Parish School Bd., voted $780,000 bonds, school imprvs. CD 2/13.

▲ **Mich., Albion**—HOUSING—Albion Housing Comn., R. J. Ray, director, redevelopment 2 housing Projs. incl. 220 family unit at Gadsen Court and Kalamazoo slum clearance of 27 Acres at Gadsen Court and 26 acres at Kalamazoo, $2,000,000.

N. Y., Briarcliff Manor—SCHOOL—Bd. Educ., Briarcliff Manor elementary school on 14-acre site on Ingham Rd. $525,000.

▲ **N. C., Asheville**—SCHOOLS—Buncombe Co. Bd. Educ., Asheville, plans by Brackett & Brackett, Technical Bldg., North Buncombe Consolidated High School, $500,000; plans by W. Stewart Rogers, 1095 Hendersonville Rd., Fairview School $300,000; plans by Six Associates, Inc., 1095 Hendersonville Rd., Livingston Street School, $300,000, Aycock School, $350,000; plans by Lindsey M. Gudger, 52 Carter St., Candler School, $350,000; Haw Creek High School, $500,000, Sand Hill High School $500,000, Hill Street School, $503,000; plans by Henry L. Gaines, 1095 Hendersonville Rd., Black Mountain-Swannanoa Consolidated High School, $500,000; plans by Anthony Lord, 1095 Hendersonville Rd., Western Consolidated High School, $500,000. CD 2/29.

O., Bellefontaine—INFIRMARY—Logan Co., Court House, $450,000 bond election May 6, infirmary. $491,000.

▲ **O., Lebanon**—MENTAL INSTITUTION—State Welfare Dpt., John Lamneck, Dir., State Office Bldg., Columbus, mental institution at Lebanon State Farm. $6,000,000. CD 1/24/47.

▲ **Ore., Salem**—MATERNITY WING—Salem General Hospital, Salem, plans by James L. Payne, Salem, maternity wing. $1,000,000. CD 6/19/44.

▲ **Tenn., Chattanooga**—HOUSING—Chattanooga Housing Auth., East Lake Courts, 400 addnl. housing units. $3,000,000.

▲ **Tenn., Knoxville** — AUDITORIUM, etc. — City, c/o mayor, City Hall, municipal auditorium-parking garage $3,000,000.

Tex., Dickinson—SCHOOLS—Dickinson Independent School Dist., Dickinson voted bonds Mar. 13, No. 1, elementary school, $300,000; No. 2, elementary school, $325,000; No. 3, elementary school, $350,000. Wyatt C. Hedrick, 5201 Fannin St., Houston, Tex. archt.

Tex., Mesquite—HIGH SCHOOL—Mesquite Independent School Dist., Mesquite, reconstruct high school. $450,000.

Tex., Moody—HOUSING—Moody Housing Auth., Moody, plans by N. E. Wiedemann, 1181½ Franklin Ave., Waco 75 low-cost dwelling units. $545,000. CD 11/24.

▲ **Tex., San Antonio**—SCHOOLS—San Antonio Independent School Dist., Lavaca and Matagorda Sts., plans by Ralph H. Cameron, 1701 Transit Tower, 24-room elementary school; Capitol and Thorain Sts. $475,000; plans by Atlee B. & Robert M. Ayres with B. Cocke, 3501 Broadway, 1,200 student capacity Junior High School, Barley Pl. and Arizona St. $850,000. Phelps De Wees & Simmons, 1501 Majestic Bldg., Bd. archts. for both schools. CD CD 11/29.

Vt., Burlington—DORMITORY—University of Vermont, 85 S. Prospect St., 200-student woman's dormitory. Approx. $500,000. CD 9/16/46.

Wash., Edmonds—SCHOOLS—School District No. 15, Edmonds, plans by W. A. Johnson, First National Bank Bldg., Everett, Lynwood junior high School $650,000, Mountlake Terrace elementary school, $325,000. CD 2/4.

Wash., Seattle—SCHOOL—Shoreline School District, N. 137 and Roosevelt Way, voted bonds, Woodrow Wilson Junior High School $700,000. CD 1/3.

Wis., Milwaukee—SCHOOL—Board of Education, 1111 N. 10 St., Milwaukee 3, Wis., plans by Darby, Bogner & Assocs., 759 N. Milwaukee St., Milwaukee 2, Wis., 1 and 2 story, L-shaped, 65x237x95x258 ft., elementary school at 532 St. and W. Morgan Ave. $850,000. CD 8/10/50.

N. B., Edmundson—SCHOOL—Catholic School Comn., District No. 1, P. Dube, pres., Edmundson, plans by Jean & Dupre, 181 St. Jean St., Quebec City, Que., 4 story 72x260 ft., rein.-con. frame, brick, vocational school addn., $600,000.

COMMERCIAL BUILDINGS

Conn., Hartford—APARTMENT HOUSE—Cold Gardens c/o S. A. Burkland, 150 Greenway Terrace, Forest Hills, N. Y., plans by Sullivan W. Jones Assoc., 110 E. 42 St., New York, N. Y., apartment Hendrickson Ave. near Colt Park, $800,000.

Conn., North Haven—SHOPPING CENTER—Luciani Realty Co., c/o Allan H. Pakras, archts., 945 Main St., Bridgeport, steel, brick, shopping center, roof-parking, on Washington Ave., $400,000.

▲ **Conn., West Hartford** — APARTMENTS — Hillcrest Terrace Inc., c/o S. A. Burkland, 150 Greenway Terrace, Forest Hills, N. Y., plans by Sullivan W. Jones Assocs., 110 E. 42 St., New York, N. Y., apartments Elmwood Section, south end of Hillcrest and Abbottsford Aves. $1,500,000. CD 1/16.

▲ **Ill., Elgin**—Y.M.C.A.—Young Men's Christian Assn., Elgin, plans by Le Roy Thompson, 355 Congden St., Elgin, 3 story, basmt., rein.-con. frame Y.M.C.A., Bldg., $1,000,000.

Ky., Bardstown—SCHOOL—Roman Catholic Diocese of Louisville, Southern Trust Bldg., plans by Wagner & Potts, Fincastle Bldg., Louisville, brick, stone trim St. Joseph's Parochial School, $400,000. E. R. Ronald & Assoc., 554 S. Third St., Louisville, consult. engrs.

Ky., Louisville—HOTEL—Graham Brown, Brown Hotel, 675 S. 4 St., plans by Preston J. Bradshaw, 1800 Olive St., St. Louis, Mo., hotel addn., 5 St. near Walnut St., $600,000-$850,000. CD 12/28/49.

Kan., Garden City—CHURCH—First Methodist Church, Garden City, church. $400,000.

▲ **Md., Bethesda**—SHOPPING CENTER—Samuel Barrow, 1321 Connecticut Ave. N. W., Wash., D. C., plans by Corning & Moore, 1726 M. St. N. W., Wash., D. C., shopping center, Bradley Blvd., $1,600,000.

Mass., Danvers—RESIDENCES—Joseph T. Mackey, 4 Riverway Rd., Salem, 27 residences, Porter Acres, off Water St. $300,000.

Mo., Creve Coeur (St. Louis 24, P.O.)—HEADQUARTERS OFFICE—Monsanto Chemical Co., 1700 S. Second St., St. Louis, Zone 4, plans by Holabird & Root & Burgee, archts.-engrs., 180 N. Wabash St., Chicago, Ill., and Frederick Dunn, assoc. archt., 1218 Olive St., St. Louis, Zone 3, headquarters office or buildings on 252 acre tract near Lindbergh Blvd. and Olive St. Rd. CD 12/18.

▲ **Mo., Kansas City**—LABORATORY—Midwest Research Institute, c/o Kenneth A. Spencer, ch. Bd. Governors, 4049 Penn. St., Zone 2, plans by Neville, Sharp & Simon, 12 St. and Walnut Bldg., Kansas City 6, Mo., 4 story, brick, limestone, 64x800 sq. ft. laboratory, on 8.67 acre site, Volker Blvd. and Oak St. $1,575,000.

▲ **Neb., Omaha**—HOSPITAL, NURSES HOME—Immanual Hospital, 34 and Fowler Ave., plans by L. A. Daly Co., Insurance Bldg., hospital addn. $600,000; nurses home addn. $400,000. CD 2/25.

▲ **O., Dayton**—CHURCH—St. Anthony of Padua Catholic Church, Father Francis Kuenle, Bowen and St. Charles Ave., plans by Edward Schulte, 920 E. McMillan St., Cincinnati, 60x160 ft. Lannon stone, Timestone trimmed church facing St. Charles Ave., 150-ft. tower. $1,500,000.

O., Youngstown—SHOPPING CENTER—Westview Heights, Inc., c/o D. D. Davis, 5234 Glenwood St., shopping center on 400x1,200 ft. track on Hubbard Rd. near Hubbard Manor area. $500,000.

▲ **Okla., Oklahoma City**—HOUSING—C. E. Duffner, Cravens Bldg., plans by Albon W. Davis, Liberty Bank Bldg., 400 homes Hill Crest Housing Development. $1,000,000.

Okla., Oklahoma City—HOUSING—Steven Pennington, Liberty Bank Bldg., plans by Albon W. Davis, Liberty Bank Bldg., Pennington-Nichols Hills housing development. $450,000.

Pa., Bryn Mawr—APARTMENT DEVELOPMENT—Anthony Falcone, 2330 Haverford Ave., Ardmore, plans by George Nauta, 2325 Belmont Ave., Ardmore, apartment development, Montgomery Ave. near Merion Ave. $500,000.

▲ **Pa., Cynwyd**—APARTMENT—Anthony Falcone, 2330 Haverford Rd., Ardmore, plans by George Nauta, 2325 Belmont Ave., Ardmore, apartment house Conshohocken State Rd. $2,000,000.

▲ **Tex., Houston** — BANK, OFFICE — Second National Bank of Houston, 800 Main St., multi-story bank and office sect. of block adjacent to E. Esperson Bldg. $3,000,000.

▲ **Wash., Spokane**—HOUSES—Western Builders Co., W 2208 Wellsley St., Spokane, 718 houses in northwest part of city, $7,500,000.

Wash., Yakima—CATHEDRAL—Corp. of the Catholic Bishop, 212 N. 4 St., Yakima, Wash., cathedral, $591,700.

▲ **Que., Montreal**—APARTMENT—Syndicate c/o J. Wiseman, 3445 Ridgewood Ave., Montreal, Que., plans by Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St., W., Montreal, Que., 100-suite apartment, "The Amesbrooke," Dorchester St. W. and Amesbury, Approx. $1,000,000. I. S. Beckler, 1250 Mc Gill College Ave., Montreal, Que., engr.

INDUSTRIAL BUILDINGS

▲ **Ala., Birmingham**—PLANT ADDNS.—McWane Cast Iron Pipe Co., 1201 Vanderbilt Rd. N., Birmingham, plant addns., $3,000,000.

▲ **Ala., Tuscaloosa**—PLANT ADDNS.—Reichold Chemicals Inc., Tuscaloosa, plant addns., $1,500,000.

▲ **Ark., Gum Springs**—PLANT—Reynolds Metal Co., 3 and Grace Sts., Richmond, Va., aluminum reduction plant, $30,000,000. J. Gordon Turnbull, Inc., 2630 Chester St., Cleveland, O., consult. engr. CD 2/21.

Ga., Athens—PLANT—Athens Chamber of Commerce, Athens, Ga., mfg. plant, $500,000.

▲ **Ill., Springfield**—PLANT EXTEN.—Allis-Chalmers Mfg. Co., 3000 S 6 St., Springfield, plans by Hadley & Worthington, Myers Bldg., Springfield, 1 story 300,000 sq. ft., brick, steel main plant exten., $15,000,000. CD 3/13.

Ky., Louisville — FREIGHT TERMINAL — Inter-State Freight System, 812 W. Magnolia Ave., freight truck terminal, $500,000.

Ky., Louisville—GARAGE, etc.—Riss & Co., 1601 N.W. Parkway, garage, office and terminal, $500,000.

Mass., Boston — MANUFACTURING BLDG. — Doelcam Corp., c/o A. J. McFarland, 1 Federal St., Boston, mfg. bldg. and offices, 1400 Soldiers Field Rd., Brighton, $400,000. Lockwood-Greene Engineers, Inc., 40 Central St., consult. engr.

▲ **Tenn., Charleston**—PAPER PLANT—Bowater Southern Paper Corp., c/o Bowaters Newfoundland Pulp & Paper Mill Ltd., Corner Brook, Newfoundland, paper mill, $50,000,000. J. E. Sirrine Co., 215 S. Main St., Greenville, S. C., consult. engr. CD 9/24.

Tex., Deer Park—PLANT—Shell Oil Co., Deer Park, aviation-oils plant imprvs. $300,000.

Tex., Houston—PLANT—San Jacinto Chemical Corp., c/o San Jacinto Ordnance Depot, Houston, plant expans. to recover 11,500 addnl. tons of nitrogen yearly. $900,000.

▲ **Tex., Houston**—WAREHOUSE—Sears Roebuck & Co., W. Arthington and S. Homan Sts., Chicago, Ill., approx. 375,000 sq. ft. warehouse, 20-acre tract on Griggs Rd. $2,500,000.

▲ **Tex., San Antonio**—WAREHOUSE—Community Realty Co., Travis Bldg., warehouse. $1,088,727.

▲ **Tex., Sulphur Springs**—PLANT—Rockwell Mfg. Co., 400 N. Lexington St., Pittsburgh, Pa., plant. $1,670,000.

▲ **Ont., Erieau**—PLANT—International Salt Co. of Canada Ltd., c/o International Salt Co., Inc., Adams and Thomas Sts., Scranton, Pa., U.S.A., Canadian salt plant 20 mi. southeast of Chatham, $3,500,000.

UNCLASSIFIED

La., Rayne—WATER AND LIGHT PLANT—Town, c/o town, clk., $785,000 bond election Apr. 9, addns. combined water and light plant.

Mass., Lanesboro—RACE TRACK—Raceways Corp., Daniel Marr, 25 D St., South Boston and L. Murphy, 57 Samoset St., Dorchester, race track off Rte. 7 and concession bldgs., $350,000.

O., Portsmouth—SUB-STATIONS—Ohio Power Co., 305 Cleveland Ave., S.W., Canton, substations in Portsmouth area to serve proposed new natural gas pumping plant of Texas and Eastern Gas Corp. near Wheelersburg, W. Va. $441,000.

O., Youngstown—TELEVISION STATION—Vindicator Printing Co., Vindicator Sq. and W. Boardman St., television station, transmitter and tower, studio and offices on 20-acre tract fronting on Mable Ave., between Gibson St. and extens. of Zedaker St. Frank A. Dieringer, ch. engr., WFMJ, c/o owner, engr.

Tennessee—RURAL DISTRIBUTION LINES—Forked Deer Electric Co-operative, Halls, 114 mi. rural distr. lines and sys. imprvs., Lauderdale Co. $365,000.

Tenn., Knoxville—GAS MAINS—Knoxville Utilities Bd., 626 S. Gay St., extend gas mains into south area of city. $400,000.

Tenn., Lawrenceburg—GAS SYSTEM—City, natural gas distr. sys. Approx. $300,000. Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, La., consult. engrs.

Texas—TELEPHONE LINES—Southwestern Bell Telephone Co., 308 S. Akard St. Dallas, laying 32 mi. strip of underground telephone lines between Terrell and Dallas, $440,000; laying horse-shoe-shaped pattern of underground telephone lines between Denison, Sherman, Luella and Bells Junction, $434,700; underground telephone lines linking McKinney, Tex. to Dallas-Holdenville, Okla. main cable line, $124,000.

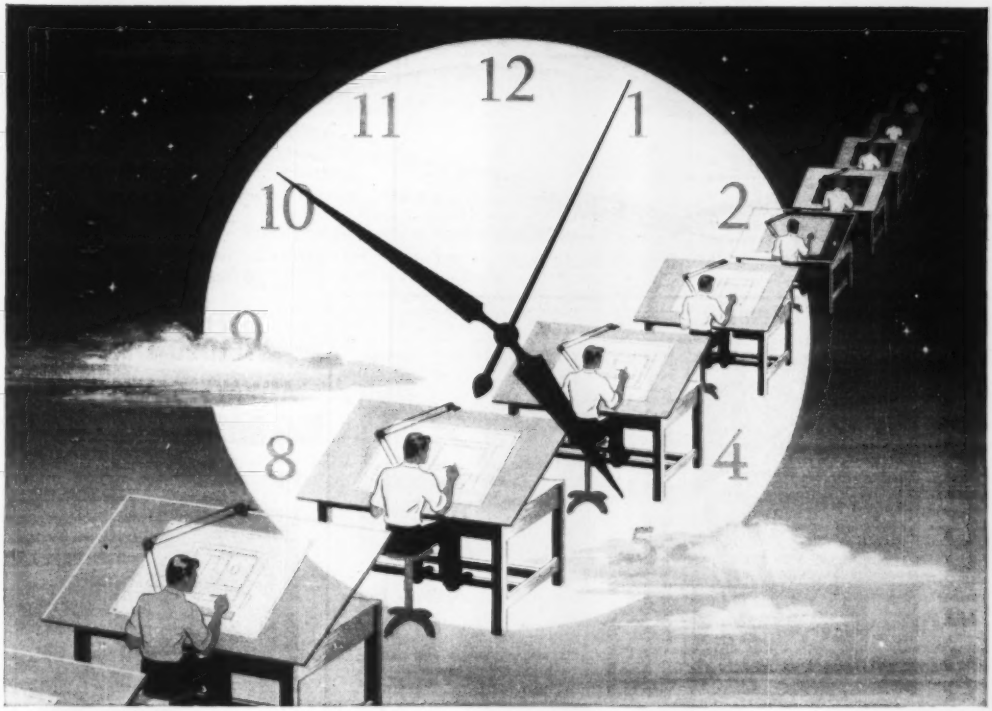
▲ **Tex., Houston**—TRACK REMOVAL—Missouri Pacific R. R. Co., W. H. Hobbs, (h. Eng. Sys. (Western Dist.) Missouri Pacific Bldg., St. Louis 3, Mo. removal of all tracks in vicinity San Jacinto Dam Reservoir area. $2,500,000.

Tex., Houston—PIPE LINE REMOVAL—Sinclair Pipe Line Co., Commerce Bldg., addnl. existing pipe line removal due to San Jacinto Dam Proj. $215,000.

Tex., Houston—PIPE LINE REMOVAL—Texas Co., Texas Bldg., addnl. existing pipe line removal due to San Jacinto Dam Proj. $250,000.

Va., Norfolk—TRANSFORMER—Virginia Electric & Power Co., Boush & Bute Sts., electric transformer in Oakwood Terrace Sect. $400,000.

Washington—DISTRIBUTION LINE—Public Utility District No. 1, of Klickitat county, Goldendale, 73 miles of electric distribution line and sys. imprvts., Klickitat Co., $440,000. CD 3/25/50.



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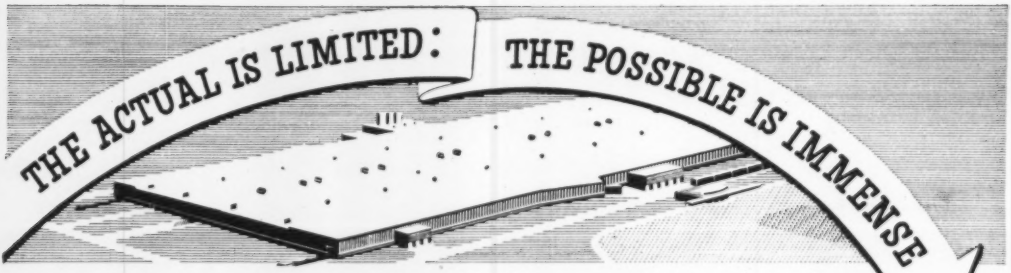

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A FASTER, simpler method for constructing buildings with welded steel has gained several important benefits for our clients. For example, on this 500-ton framework, welded design enabled three—5-man crews to set and weld all steel in only 70 days. The structural cost for fabricating and erecting came to only $150 per ton as compared to $195 for traditional methods.

After construction was under way the owner decided to add a second story because of an increase in business. To accommodate his request required only to increase the column and beam sizes for the first floor and transfer original columns and beams to the second floor. With this design neither the owner nor the contractor was penalized through increased costs or delays in construction time.

Using simple, stiff leg derricks, columns were positioned on embedded base plates. When a number of columns were erected, beams were hoisted in position and welded. Structural members, like brackets and braces, were flame cut on the job and welded as required.

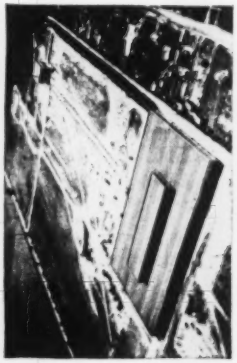

Fig. 3—120,000 Square Foot Factory Building *for The Hamilton Manufacturing Company, Columbus, Indiana. Factory will eventually enclose all the area to the boiler house.*

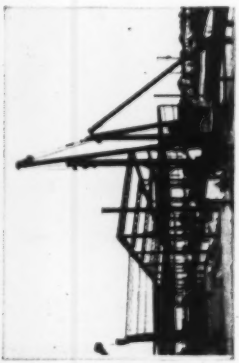

Fig. 4—Erecting Columns *using 1½ ton stiff leg derrick.*

WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

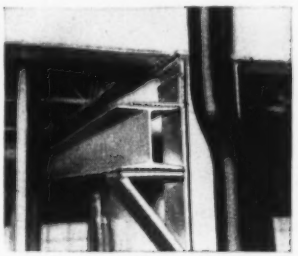

Fig. 1—Typical Beam-to-Column Connection *designed for second floor loading of 200 pounds per square foot. Columns are 8" x 8" and beams 12" x 12" H beams. Also shows bracket for crane rail.*

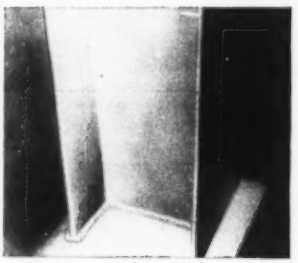

Fig. 2—Column-to-Base Detail—*Joint is welded in position after column is erected and plumbed.*

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STATE HIGHWAY LETTINGS

BRIDGES
April 9, Maine

STREETS AND ROADS
April 8, 22, Massachusetts

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

J. F. Fitzgerald Constr. Co., 212 Essex St., Boston, Mass. CA $2,514,901, est. $2,220,000. hy. and bridge, Raynham-Bridgewater and West Bridgewater. Bids Mar. 4, awarded Mar. 19. CD 3/10 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **M. S. Kelliher**, 294 Washington St., Boston, Mass. LB $,769,546. est. $1,400,000. 150 HOUSING units, Pope's Hill Sect., Proj. Mass 2-10, Dorchester, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids Feb. 21. CD 7/9/51.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

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April 8, New Jersey — April 16, Delaware, New York
April 17, New Jersey — April 18, 25, 26, Pennsylvania

BIDS ASKED—BUILDINGS

▲ **N. Y., Levittown**—SCHOOLS—B.A. 4/7—Bd. Educ., Union Free School Dist. 5, Division Ave. School, Abbey Lane Grade School addn. $844,000: Northside Grade School, addn., Kingfisher and Pelican Rds.

▲† **N. J., Camp Kilmer**—ADMINISTRATION, etc.—B.A. 4/22—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., administration bldg., warehouse and other buildings Approx. $5,000,000. Extended date. Tectonic Assocs., Somerville, archts. CD 3/13.

▲† **N. J., Fort Monmouth**—HOUSES, etc.—B.A. 4/22—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., addnl. facilities, 4 permanent 20 ft. houses, 5 emergency 20 ft. houses, cold storage plant and utilities, $1,250,000. Extended date. CD 3/18.

▲ **Pa., Oxford**—SCHOOLS—B.A. 4/22—At office Buchart Engineering Co., archt., 621 W. Market St., York, 2 schools and altering high school for Oxford Area Joint School Bd. Auth., Oxford, Pa. $2,500,000. CD 3/11.

▲ **Pa., Fallsington**—SCHOOL—B.A. 4/23—Falls Twp. School Bd., Fallsington, Oxford Valley Elementary School. $1,000,000. A. E. Micklewright, 72 Ewing St., Trenton, N. J., archt. CD 3/24.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Pittston**—POWER STATION—Scranton Electric Co., 507 Linden St., Scranton, soon lets contract electric power station addn. $10,000,000. Gilbert Associates, Inc., 412 Washington St., Reading, engr. CD 10/17.

Pa., Rosemont—CONVENT—At office Henry D. Dagit & Sons, archts., 1329 Race St., Phila., soon lets contract convent for St. Thomas of Villanova Roman Catholic Church, 1242 Montrose Ave. $300,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.

S. J. Groves & Sons Co., Empire Bldg., Syracuse, N. Y. LB $2,996,361. est. $3,349,000. 9.23 mi. New York State Thruway-The Ontario Sect. sub-division, O.T. 52-5, Seneca Co.;

The Lane Constr. Corp., 37 Colony St., Meriden, Conn., LB $874,837, est. $1,020,000. 3.12 mi. The New York State Thruway-The Mohawk Sect.- Sub. 16, M.T. 52-5, Montgomery Co.;

Louis Mayersohn, 36 State St., Albany, N. Y., LB $1,239,792, est. $1,311,000. 3.56 mi. New York State Thruway-The Mohawk Sect., Sub. 4, M.T. 52-6, Oneida Co. Bids Mar. 26. CD 3/7.

† **Allen N. Spooner & Son, Inc.**, 143 Liberty St., New York 6, N. Y., CA, $119,685, est. $109,421, addnl. construction Caven Point Terminal, Jersey City, NEW JERSEY. U. S. Eng., 80 Lafayette St., New York, N. Y. Bids Feb. 27. CD 1/30.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

J. Robert Bazley, Inc., P.O. Box 117, Pottsville, Pa., CA. $2,177,059, construct 30,391 ft. divided highway with 2-lanes c. conc. pavement 24 ft. wide, three I-beam bridges, T.R. 322 and 422. The Hummelstown By-Pass, Dauphin Co. Bids Mar. 14. Awarded Mar. 25. CD 3/19, under LB.

▲ † **Ajax Constr. Co.**, 925 15 St. N. W., Wash., D. C. CA $1,578,595. airmen's dormitory, Eng. 49-080-52-43-(41), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N. W., Wash., D. C. Awarded Mar. 17. CD 3/17, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Lefrak Organization, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, N. Y., Owner Builds. $600,000. 6 story APARTMENT at 1502 52 St., BROOKLYN, N. Y.

▲ **Fillmore Land Corp.**, c/o Seeling & Fingelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y., Owner Builds. Approx. $2,500,000, seven 2 story BUILDINGS, on 11-acre site on Fillmore Ave. between E. 53 St. and Avenue T for 340 families, BROOKLYN, N. Y.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y., LB $6,859,500, two TREATMENT BLDGS. 127 and 128 at Central Islip State Hospital, CENTRAL ISLIP, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 26. CD 2/21.

▲ **Fairhaven Estates Homes**, c/o Teas & Steinbrenner, archts., Homeland Bldg., Malverne, N. Y., Owner Builds. Approx. $1,000,000. 125 HOUSES on 23-acre site Front St. and Newbridge Rd., EAST MEADOW, N. Y.

▲ **Heathcote Heights Building Corp.**, c/o Lee Perry, archt., 419 North Avenue, New Rochelle, N. Y., Owner Builds. Approx. $3,000,000. 75 HOUSES on tract Dorchester and Baraud Rds. and Morris Lane, NEW ROCHELLE, N. Y.

▲ **William L. Crow Constr. Co.**, 101 Park Ave., New York 17, N. Y., CA. Approx. $1,000,000. 2 story OFFICE addn. at 241 E. 37 St., NEW YORK, N. Y. New York Telephone Co., 140 West St., New York 7, N. Y. CD 2/26.

▲† **John Rosenblum & Brennan Sloan**, 1860 Broadway, New York, N. Y., CA, $6,061,631, BARRACKS, HEADQUARTERS bldg., SHOPS, OFFICES, site imprvs. distribution system, sewers, FORT DIX, N. J. Dpt. Army, 121 N. Broad St., Phila., Pa. Bids Feb. 26. CD 3/18. under LB.

▲ **DuMor Corp.**, 1401 Haven Ave., Ocean City, N. J., Separate Contracts. $1,020,000, RESIDENTIAL DEVELOPMENT, Wilmot, Bethel and Meyran Aves., SOMERS POINT, N. J.

Deer Chase Manor, Inc., c/o Mike Mazzolla, Rte. 37, Toms River, N. J., Separate Contracts. $535,000 RESIDENTIAL DEVELOPMENT, Deer Chase Manor, TOMS RIVER, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Ocean Crest Village**, Baker and New Jersey Aves., Wildwood, N. J., Separate Contracts. $3,500,000, RESIDENTIAL DEVELOPMENT, SHOPPING CENTER and SUPER MARKET, WILDWOOD CREST, N. J.

Mar-Ann Holding Co., c/o Facciolo Homes, Inc., Lansdowne Centre Bldg., Lansdowne, Pa., Separate Contracts. Approx. $800,000. RESIDENTIAL REVELOPMENT, Sproul Rd., BROOMALL, PA.

▲ **Robert C. Fallon**, State Rd. and Pennsylvania R. R., Upper Darby, Pa., Separate Contracts. Approx. $1,-650,000. 100 RESIDENCES, Sproul Rd. in Marple Twp., BROOMALL, PA. Erling Wenge, McClatchy Bldg., Upper Darby, Pa., archt.

† **Brotherton Constr. Co.**, 1025 S. 21 St., Harrisburg, Pa., LB $602,760, FAMILY QUARTERS Bldg. 20 alteration, CARLISLE, PA. Dpt. Army, Carlisle, Pa. Buchart Engineering Corp., 611 W. Market St., York, Pa., engrs.-archts.

Joseph Milgram Presidential Apartments, City Line and Monument Ave., Phila. Pa., Separate Contracts. Approx. $550,000 RESIDENTIAL DEVELOPMENT, Rockland Ave., CYNWYD, PA. David Slott, 7060 Garrett Rd., Upper Darby, Pa., archt.

▲ **McClatchy Building Co.**, 69 and Market Sts. Upper Darby, Pa., Separate Contracts. Approx. $1,000,000. RESIDENTIAL DEVELOPMENT, FOLCROFT, PA.

† **H. B. Alexander & Sons, Inc.**, 315 Vaughn St., Harrisburgh, Pa., CA. $676,000. Storage WAREHOUSE, Marietta Transportation Corps Depot, Eng 18-020-52-31, MARIETTA, PA. U. S. Eng., 24 St. and Maryland Ave. Baltimore, Md. Bids Mar. 4, CD 3/17. Under LB.

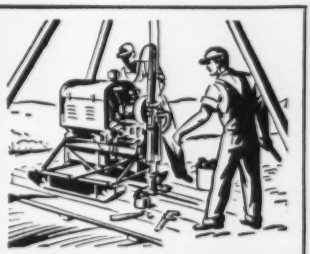
Landau Bros., 125 1st Ave., Pittsburgh, Pa., CA. Approx. $85,000. 1 story 100x150 ft. Sign and Display MFG BLDG., MCKEESPORT, PA. G. C. Murphy Co., 533 5th Ave., McKeesport, Pa., H. V. Harkless, c/o owner, archt.

▲ **Arthur E. Stern & Martin Levin**, 1536 N. 59 St., Phila., Pa., Separate Contracts. $1,950,000. RESIDENTIAL DEVELOPMENT, Conshohocken State Rd. etc. NARBERTH, PA.

▲† **Brotherton Const Co.**, 1025 S. 21 St., Harrisburg, Pa., LB $1,249,730, OFFICE and WAREHOUSE, electric, water, steam distr. sys., street lighting sys., paving, sidewalks, curbs and gutters, NEW CUMBERLAND, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Kullijan & Co., 1200 N. Broad St., Phila., Pa., engrs. Bids Mar. 11. CD 2/15.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila. Pa., LB $1,793,000, Norris HOMES, 10 and Berks Sts. area, PHILA. PA. Phila. Housing Auth., 42 S. 15 St., Phila. Pa. Bids Mar. 6. CD 2/7.

Max Green, 6600 N. Gratz St., Phila. Pa., Separate Contracts. Approx. $600,000. RESIDENTIAL DEVELOPMENT, 10 and Warnock Sts., PHILA. PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.



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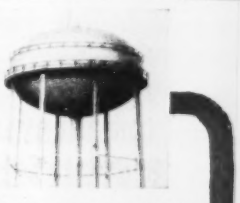

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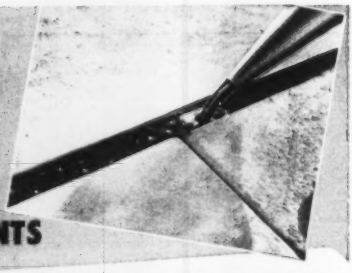

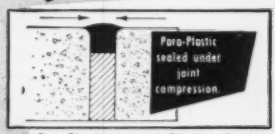

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—18"	9.60	8.70
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▲ Ragnar Benson, Inc., Investment Bldg., Pittsburgh, Pa. CA. $8,041,437, 1,089 family HOUSING DEVELOPMENT, St. Clair Village, PITTSBURGH, PA. Pittsburg Housing Auth., City County Bldg., Pittsburgh, Pa. Bids Mar. 11. CD 2/7.

▲ F & J Tigani Constr. Co., 13 and Union Sts., Wilmington, Del. Separate Contracts, $1,400,000, RESIDENTIAL DEVELOPMENT, Linden Ave., ELSMERE DEL. (Wilmington, P. O.)

▲ Anthony P. Miller, Inc. 3333 Arctic Ave., Atlantic City N. J., LB. $1,735,500, general contract Eastlake Extension HOUSING DEVELOPMENT, WILMINGTON, DEL. Wilmington Housing Auth., 2405 Thatcher St., Wilmington, Del. Bids Mar. 6. CD 2/28.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 9, Louisiana — April 11, Kentucky
STREETS AND ROADS
April 9, Louisiana — April 11, Kentucky
April 17, Florida

BIDS ASKED—BUILDINGS

▲ Va., Arlington—HIGH SCHOOL—B.A. 4/14—Bd. Educ., 1426 N. Quincy St., Wakefield Junior-Senior High School. $4,000,000. Rhees Burket, 1223 Connecticut Ave. N.W., Wash., D. C., archt. CD 2/28.

Ala., Tuscaloosa—STUDENT UNION—B.A. 4/23—University of Alabama, Tuscaloosa, 4 story union bldg. addn., Approx. $300,000. Miller, Martin & Lewis, Title Guarantee Bldg., Birmingham, archts. CD 3/23/52

Ala., Mobile—SCHOOL—B.A. About 5/1—State Bd. Educ., 501 Dexter Ave., Montgomery, trade school, $750,000. Platt Roberts & Co., Merchants National Bank Bldg., archts. CD 11/29/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh, Wrenn-Wilson Constr. Co., Box 393, Durham, N. C., LB $119,788, est. $125,000-$150,000, bridge over Crabtree Creek and grade separation over 15-A on U. S. 70 between Raleigh and Durham county line, Proj. 4838, Wake Co.;

F. A. Triplett, Inc., Chester, S. C., LB $125,102, est. $125,000-$150,000, bridge over Inland Waterway at Holdens Beach, Proj. 3-9-28-227, Brunswick Co. Bids Mar. 25. CD 3/17.

▲ NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh, Atlantic Bitulithic Co., 2400 Roseneath Rd., Richmond 21, Va., LB $92,944, est. $100,000-$125,000, c. conc. binder and surf. 6.33 mi. U. S. 52 and 421 and NC 67, Proj. BS 8-6-71-189, Code 5900-832, Forsyth Co.;

Ballenger Paving Co., Box 1046, Greenville, S. C., LB $107,764, est. $75,000-$100,000, traffic bound macad. or PCSBC and bit. surf. tr. or b. conc. surf. 3.49 mi. Proj. S-403, S-492 (1), Person Co.; LB $74,863, est. $50,000-$75,000, traffic bound macad. or PCSBC and bit. surf. tr. or b. conc. surf. 2.32 mi. Proj. S-401, S-486 (1), Person Co.;

Barnhill & Long, Inc., Tarboro, N. C., LB $67,052, est. $50,000-$75,000, grading 6.65 mi. Proj. 2-654, S-533 (1), BS 2-7-26-5, Washington Co.;

Barrus Constr. Co., Box 561, Kinston, N. C., LB $78,177, est. $75,000-$100,000, bit. surf. tr. or sand asph. or b. conc. surf. 23.51 mi. Proj. M.S. 4-4-19, 4-9-19, 227, 232, 233, 234, 235, Wayne Co.; LB $67,834, est. $50,000-$75,000, sand asph. base and surf. 4.6 mi. NC 55, Proj. BS 2-6-21-113, Lenoir Co.;

J. K. Cecil & Sons, Lexington, N. C., LB $156,665, est. $125,000-$150,000 traffic bound macad. or bit. surf. tr. 7.14 mi. Proj. 6-407, S-607 (1), Randolph Co.; LB $160,595, est. $150,000-$175,000 traffic bound macad. and bit. surf. tr. 8.79 mi. Proj. 6-163, S-584 (1), Davidson Co.;

J. F. Cleckley & Co., Orangeburg, S. C., LB $80,741, est. $75,000-$100,000, sand asph. or b. conc. surf. 16.4 mi. Proj. 3-9-29-243, Columbus Co.;

F. D. Cline Paving Co., Box 349, Raleigh, N. C., LB $164,125, est. $175,000-$200,000, bit. surf. tr. or sand asph. or b. conc. surf. 47.1 mi. Proj. 4-9-35-212, 4-9-38-228, 229, 235, 236, 237, 242, Franklin and Wise Counties;

Dickerson, Inc., Box 448, Monroe, N. C., LB $182,544, est. $150,000-$175,000, bit. surf. tr. 51.9 mi. Proj. 10-9-88-211, 212, Buncombe Co.; LB $111,459, est. $100,000-$125,000, bit. surf. tr. 33.67 mi. Proj. 6-9-56-227, 6-9-51-219, Randolph and Davidson Counties; LB $127,289, est. $100,000-$125,000 traffic bound macad., bit. surf. tr. 5.33 mi. Proj. 6-109, S-567 (1), Chatham Co.; LB $95,620, est. $100,000-$125,000, bit. surf. tr. 28.1 mi. Proj. 6-9-51-220, Davidson Co.; LB $110,119, est. $100,000-$125,000, STBC, bit. surf. tr. or sand asph. surf., or b. conc. surf. 6.66 mi. Proj. 1-102, S-435 (2), Bertie Co.; LB $150,555, est. $100,000-$125,000, STBC and bit. surf. tr. 11.39 mi. Proj. 6-351, S591 (1), Lee Co.;

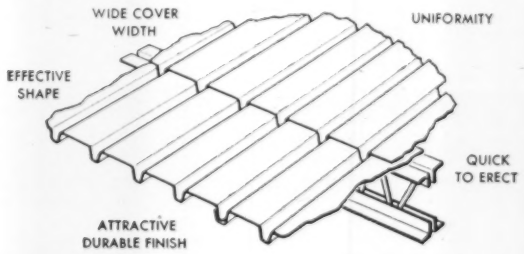
Gilbert Eng. Co., Inc., Statesville, N. C., LB $188,475, est. $150,000-$175,000, STBC, bit. surf. tr. or b. conc. surf. 18.41 mi. Proj. 9-9-82-222, Iredell Co.;

W. E. Graham & Sons, Cleveland, N. C., LB $61,825, est. $50,000-$75,000, STBC, bit. surf. tr. 9.5 mi. Proj. 9-9-77-215, Alexander Co.; LB $103,715, est. $75,000-$100,000, STBC, bit. surf. tr. or b. conc. surf. 16.3 mi. Proj. 9-9-82-224, Iredell Co.;

Ben B. Propst, Box 526, Concord, N. C., LB $64,973, est. $50,000-$75,000, bit. surf. tr. 20.7 mi. Proj. 6-9-50-217, Chatham Co.; LB $60,445, est. $50,-

(Continued on page 116)

ALL ROOF DECK MAY LOOK ALIKE, BUT . . . knowing a few important differences can save you construction time, trouble and expense. Here's what to look for:



Granco Steel Roof Deck has longitudinal ribs 1⅛" deep spaced on 5¾" centers and is available in 18, 20, or 22 gauge. The ribs are flared at one end permitting proper nesting at end laps. Maximum sheet length is 14' 4". Positive attachment obtained by welding.

EFFECTIVE SHAPE—*Are you getting maximum sheet strength?* You are if the roof deck you select has been designed to obtain the proper relationship between rib and flat. To give maximum strength and cover per pound of steel, there must be a proper ratio between these rib (tension) and flat (compression) sections . . . the same relationship you find in Granco Roof Deck! In addition, Granco Roof Deck has the same thickness as a 2" x 4" giving maximum flexibility for architectural design.

WIDE COVER WIDTH—*Will an excessive number of side laps weaken the roof?* An expanse of frequently lapped sheets cannot possibly offer as much resistance to concentrated loads as a wide seldom-lapped surface. That's why it's best to select roof deck for maximum width with a minimum number of laps. Granco Roof Deck has a wide cover width of 28¾" . . . wider than most competitive brands. That means more strength and safety, less welding, and on large jobs, a considerable economy in laying time.

UNIFORMITY—*Are the patterns identical in every sheet?* In most brands of roof deck, yes. But, there are exceptions. When hands and human judgment are employed in the forming process, slight sheet variances must occur. These variances are greatly multiplied when sheets are placed end-to-end. Don't risk improper fits, endless re-matching of sections and slow, costly job progress. Specify GRANCO STEEL ROOF DECK because Granco sheets are rotary press formed, *machine-made* for uniformity and perfect fit. "Sheet crawl" is virtually eliminated.

ATTRACTIVE DURABLE FINISH—*How will it look in 5, 10, 15 years?* Of course, that will depend largely on weather and atmospheric conditions in your locality. But, some roof deck is better prepared to withstand age and oxidation than others. Granco Roof Deck, for example, is protected with a tough, rust-resistant alkyd resin, baked on for longer life. Granco Deck looks better, lasts longer, creates a striking panel effect for ceilings, too.

QUICK TO ERECT—*Is your roof deck the correct shape for fast placement?* It *does* make a difference! Long, narrow sheets are cumbersome to handle, difficult to lay properly. The same applies to short, wide sheets. Granco Roof Deck, on the other hand, is a convenient shape for fast placement. Each sheet covers 34 square feet. Sheet dimensions were designed with speed in mind.

Write for Free Booklet—*Gives description, physical properties, complete loading tables and suggested specifications for Granco Steel Roof Deck. Request booklet No. BDr-511-9-6.*

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(Continued from page 114)

000-$75,000, bit. surf. tr. 18.9 mi. Proj. 6-9-55-219, Moore Co.;

Rea Constr. Co., Box 2015, Charlotte, N. C., LB $1,555,226, est. $400,000-$500,000, subgrade reinf., traffic bound macad. and c. conc. pavement 12.98 mi. U. S. 29 and 70, Proj. 5256, F. I. 545 (7), F. I. 645 (5) U. I. 645 (6), Davidson Co.;

Sloan Constr. Co., Inc., Box 747, Greenville, S. C., LB $150,496, est. $150,000-$175,000. b. conc. binder and surf. 10.4 mi. U. S. 220, Proj. BS 5-6-49-192, Rockingham Co.; LB $79,479, est. $50,000-$75,000, added material and bit. surf. tr. or b. conc. surf. 6.01 mi. Proj. 9-9-78-220, Burke Co.;

Nello L. Teer Co., Box 1131, Durham, N. C., LB $430,724, est. $400,000-$500,000, traffic bound macad. and bit. surf. tr. 12.68 mi. Proj. 4157, Orange and Durham Counties;

A. R. Thompson, Contractor, Inc., Rutherfordton, N. C., LB $108,880, STBC, bit. surf. tr. 10.63 mi. Proj. 9-9-86-220, Rutherford Co.;

Thompson-Arthur Paving Co., Box 1197, Greensboro, N. C., LB $186,481, b. conc. binder and surf. 12.05 mi. U. S. 421, Proj. BS 5-6-46-188, Guilford Co.; LB $68,972, est. $75,000-$100,000, traffic bound macad. or PCSBC, bit. surf. tr. or b. conc. surf. 3.85 mi. Proj. 5-305, S-548 (1), Guilford Co.; LB $60,345, est. $50,000-$75,000, traffic bound macad. bit. surf. tr. or b. conc. surf. 3.58 mi. Proj. 5-454, S-389 (2), Rockingham Co.;

Wayne Engineering & Construction Co., Inc., Box 306, Mount Olive, N. C., LB $236,883, est. $250,000-$300,000. STBC, added material, bit. surf. tr. or sand asph. or b. conc. surf. 18.61 mi. Proj. 4-9-38-233, Wake Co.;

Propst Constr. Co. Inc., Concord, N. C., LB $602,621, Proposition 2.

Brown-Coble Constr. Co., Lexington, N. C., LB $975,-709, Proposition 1, for subgrade reinf. and c. conc. pavement or stabil. aggregate and bit. surf. tr. 16.55 mi. U. S. 29, Proj. 6587, Mecklenburg and Cabarrus Counties; Bids Mar. 25. CD 3/17.

▲ **Birmingham Building Co.**, 909 7th Ave. S., Birmingham, Ala., LB $1,049,609, natural gas transmission lines;

E. N. Murray, Buena Vista, Ga., LB $689,090, distribution lines in Clinton;

Southeastern Contrg. Co., 2111 7th Ave. S., Birmingham, Ala., LB $707,966, distribution lines Newberry, CLINTON and NEWBERRY, S. C. Clinton-Newberry Natural Gas Auth., Newberry, S. C. Bids Mar. 18. CD 3/10.

† **Paul Smith Constr. Co.**, 310 N. Rome Ave., Tampa, Fla., CA $531,091, airmen's quarters, and combination mess and administration bldg., Inv. 52-29, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. Bids Feb. 28. CD 3/10, under LB.

▲ **B. B. McCormick & Sons**, Box 248, Jacksonville Beach, Fla., LB, $2,084,200, airfield imprvt., runway, taxiway and apron Naval Air Station NOY 28284, JACKSONVILLE, FLA. Det. Navy Dist. P. Wks., Box 365, Naval Base, S. C. Bids Mar. 20. CD 2/21.

▲† **Pigford Bros. Constr. Co.**, P. O. Box 2027, Meridian, Miss. CA $1,157,608. Floodwall along Yazoo Diversion Canal, Inv. 52-127, MISSISSIPPI. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids Mar. 19. CD 2/19.

† **Southern Building Inc.**, Box 1815, Shreveport, La. LB $883,240 brick concrete, $723,183, wood frame, airmen's dormitories, mess and administration bldg., Alexandria Municipal Airport, ENG 03-050-52-20, ALEXANDRIA, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Mar. 21. CD 3/11.

Sullivan-Long & Hagerty, 2026 Second Ave. N., Bessemer, Ala. CA $719,640. Municipal water sys. addns., alterations, MONROE, LA. City, Monroe, La., Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, La., engrs. Bids Mar. 18, awarded Mar. 20.

▲ † **L. B. Strandberg & Son Co., Inc.**, 608 S. Dearborn St., Chicago 5, Ill. CA $1,124,391. local protection proj. pump stations, appurtenant work, Ashland. CIVENG 46-022-52-50, KENTUCKY. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. CD 3/20, under LB.

Storage building at Fairless Works, Morrisville, Pa. 25,000 sq. ft., built by Howard.

FOR A LOW BID, PROMPT DELIVERY, AND EFFICIENT ERECTION OF STEEL BUILDINGS,
CONTACT
HOWARD STEEL COMPANY
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HENRY A. BUFF, *President.*

Boyer & Johnson, Jackson, Tenn., LB $819,512, wid'n, resurf, curbs, gutters, etc. Summer Ave. imprvs., MEMPHIS, TENN., City, City Hall, Memphis, Tenn. and State Hy. Dpt., Nashville, Tenn. Bids Mar. 20. CD 3/3.

▲TENNESSEE—State Hy. Dpt., Nashville,

Anderson & Gregory Co., Cotton States Bldg., Nashville, Tenn., LB $78,551, crushed stone surf. 5.189 mi. sect. of Secondary Rte. 4330, from State Rte. 50, approx. 4 mi. west of Winchester and extending to Brownington, Proj. No. S-4330 (1), Franklin Co.; LB $75,135, crushed stone surf. 4.314 mi. sect. of Secondary Rte. 6124, from State Rte. 49, 1 mi. east of Springfield and extending 4.314 mi. toward White House, Proj. S-6124 (3), Robertson Co.;

Marion Constr. Co., Craighead Ave., Nashville, Tenn., LB $148,603, crushed stone surf., construct 2 bridges on 4 sects. State Hy. 42 2.506 mi. between Algood and Livingston, Proj. No. F-024-3-(1), Putnam and Overton Counties; LB $84,884, grading, drainage, construct 2 bridges on sect. of Secondary Rte. 6213, 3.604 mi., from Macon Co. line, south of Lafayette and extending to near State Rte. 80 at Pleasant Shade, Proj. No. S-6213 (2), Smith Co.;

R. E. Martin, 317 5th Ave. S., Nashville, Tenn., LB $779,003, crushed stone surf., construct overhead over Southern Ry. on a relocation of State Rte. 2 at Ooltewah, 3.156 mi., Proj. FI 002-3-(18), Hamilton Co.; LB $410,105, crushed stone or grav. surf. 13.741 mi. sect. State Rte. 28, from approx. 5 mi. northeast of Dunlap at Sequatchie-Bledsoe Co. line and extending to Pikeville, Proj. No. F-028-1-(8), Bledsoe Co.;

Eller & Olsen, 32nd Ave., N. Nashville, Tenn., LB $375,035, construct curbs, sidewalks, storm sewers, concrete and bit. materials paving 1.156 mi. sect. State Rte. 1 (West End Ave.) in Nashville, from 20th Ave. and extending to 32nd Ave., Proj. No. UI-001-4-(22), Davidson Co.;

L & M Constr. Co., 843 Vance Ave., Memphis, Tenn., LB $142,498, grav. or chert surf., construct 6 bridges 0.86 mi. mine sects. Secondary Rte. No. 8054 between Hardeman Co. line and State Rte. 76 near Koko, Proj. No. SAP-947-A, Haywood Co.;

H. F. Ramsey Co., Asheville, N. C., LB $292,524, grading, construct concrete box and slab type bridges 3.25 mi. relocated sect. State Rte. 68, from point 3-1/3 mi. east of Kingsport and extending towards Bristol, Proj. No. F-001-9-(16), Sullivan Co.;

Bowyer & Johnson, Jackson, Tenn., LB $819,512, concrete and bit. materials paving, construct storm sewers, curbs, sidewalks and exten. box & t-type bridge 3.323 mi. sect. of State Rte. 1 (Summer Ave.) from Highland Ave. in Memphis and extending to White Station Rd. 0.686 mi. beyond east city limits of Memphis towards Brownsville, Proj. No. UF1-001-(35), Shelby Co.; LB $164,263, gravel or chert surf., construct 4 box-type bridges 9.0 mi. sect. Secondary Rte. 8108, from Sendas Rte. 807 near Macon and extending eastward to State Rte. 76 near Somerville, Proj. No. S-8108-(1), Fayette Co.;

J. Paul Nickell, Centerville, Tenn., LB $176,595, gravel or chert surf., construct one concrete deck girder bridge 4.319 mi. sect. State Rte. 76 from approx. ½ mi. north of Hutchie River near Sunnyhill and extending to State Rte. 1 in Brownsville, Proj. No. F-047-1-(5), Haywood Co.;

Ralph E. Mills Co., Frankfort, Ky., LB $345,669, crushed stone surf., construct 3 bridges on sect. 5.577 mi. State Rte. 1, from Rutledge towards Tate Springs, Proj. No. F-001-9-(16), Grainger Co.;

Forcum-Jones Co., Dyersburg, Tenn., LB $103,135, grav. or chert surf., construct 2 bridges 5.666 mi. sect. Secondary Rte. 8044, from approx. 1 mi. east of Rives near Cypress Creek and extending to Weakleh Co. line, Proj. No. S-8009 (2), Obion Co.;

H. J. Hood & Sons, Bell Buckle, Tenn., LB $197,573, crushed stone surf., construct 3 bridges 5.537 mi. sect. of Secondary Rte. 2449, from State Rte. 29 at Winfield and extending westward via Pleasant Grove, Proj. No. S-2449 (1), Scott Co.;

J. B. Michael & Co., 1021 Heywood St., Memphis, Tenn., LB $153,952, soil cement and bit. materials paving 4 mi. sect. State Rte. 1, from Rosser and extending to Hollow Rock Rd., approx. 1 mi. west of Bruceton, Proj. SAP-948-A, Carroll Co.;

Farrar Constr. Co., McMinnville, Tenn., LB $70,363, crushed stone and bit. materials surf. 10.745 mi. sect. Secondary Rte. 4252 from State Rte. 1 at Wallin and extending northward through Shady Grove to State Rte. 26 approx. 2 mi. east of Cassville, Proj. No. S-4250 (2), Bids Mar. CD 3/3.

BUILDINGS

LOW BIDS AND CONTRACTS

Morrison Bros., 4842 Del Ray Ave., Bethesda, Md., CA, $600,000, CHURCH 2900-3000 block King St., ALEXANDRIA, VA. First Baptist Church, Alexandria, Va., CD 3/5.

▲ **Virginia Engineering Co.**, Melson Blvd., Newport News, Va. LB $6,133,000, 752 low-cost Negro DWELLINGS, Proj. VA-6-10, NORFOLK, VA. Norfolk Redevelopment & Housing Auth., Dickson Bldg., Norfolk, Va., Bids Mar. 18. CD 2/25.

The Austin Co., 16112 Euclid Ave., Cleveland, O., CA, Approx. $800,000, Mfg. PLANT, RICHMOND, VA. A. H. Robins Co., 1711 Ellen Rd., Richmond, Va. CD 11/2.

Quality Const. Co., 202 Haywood Rd. W., Asheville, N. C., CA, Approx. $300,000, DORMITORY for Allen High School, ASHEVILLE, N. C. Women's Division of Christian Service of The Board of Missions, c/o A. Eugene Cellar, archt., Graham Bldg., Jacksonville, Fla. CD 2/20.

E. N. Richards, 705 Georgetown Rd., Raleigh, N. C. Owner builds. Approx. $950,000. 120 RESIDENCES, NEW BERN, N. C.

Allen, Julian & Bingham, Asheboro, N. C., Owner builds. Approx. $350,000. RESIDENCES, SOUTHPORT, N. C.

Long Constr. Corp., 32 Mt. Pleasant St., Charleston, S. C., Owner builds. Approx. $300,000 addnl. RESIDENCES in Mt. Pleasant Area, CHARLESTON, S. C.

Barger Constr. Co., Mooresville, N. C., CA, $484,800, Lincoln HIGH SCHOOL addns., alterations SUMTER, S. C. School Dist. 17, Sumter, S. C. Bids Mar. 19. CD 3/27 under LB.

Archer Bros., North Ave., Atlanta, Ga., SA, $774,748 112 HOUSING units, CARROLLTON, GA. Carrollton Housing Auth., Carrollton, Ga. Bids Mar 21. CD 3/14.

† **George C. Parker**, Ozark, Ala., LB, $868,884, addnl. facilities, 56 buildings, at Ozark, Eng 01-076-52-55, CAMP RUCKER, ALA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. Bids Mar. 18. CD 3/6.

Gentilly Homes, 4210 Press Dr., New Orleans, La. Owner builds. $500,000. 51 RESIDENCES, Gallier St., NEW ORLEANS, LA.

Perrillat-Rickey Constr. Co., Inc., 1539 S. Rendon St., New Orleans, La., LB $450,000, 1 story, masonry cross shaped HOSPITAL, SULPHUR, LA. Calcasieu-Cameron General Hospital, Sulphur, La. Bids Mar. 18. CD 2/19.

▲ **Henry C. Beck Co.**, First National Bank Bldg., Atlanta, Ga. CA $2,661,000. 400 HOUSING. Proj. Ky 2-3, COVINGTON, KY. Covington Housing Comn., Covington, Ky.

Ben P. Dlugach, Three Sisters Bldg., Memphis, Tenn., Owner builds. Approx. $400,000. 42 RESIDENCES, Wells Station Rd., MEMPHIS, TENN.

▲ **Ajax Constr. Co. Inc.**, 321 W. Douglas St., Wichita, Kan., CA $1,500,000, catalytic CRACKING, REFINERY, crude oil unit and other bldgs., MEMPHIS, TENN. Delta Refining Co., W. Mallory Ave., Memphis, Tenn.; Koch Engineering Co., Inc., 321 W. Douglas St., Wichita, Kan., engr.-archt.

Forcum-James Co., Dyersburg, Tenn., CA $812,240, 125 HOUSING. Projects Tenn. 9-1, etc. UNION CITY, TENN. Union City Housing Auth., Union City, Tenn. Bids Feb. 29. CD 2/7.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 9, Michigan
STREETS AND ROADS
April 8, Ohio April 9, Michigan
April 18, Indiana

BIDS ASKED—BUILDINGS

Ill., **Geneseo**—SCHOOL—B.A. 4/8—School Dist. 228, 301 S. State St. Junior High School $800,000, Extended date: Wm. Stuhr, Safety Bldg., Rock Island, archt. CD 3/20.

Mich., **Redford**—OFFICE—B.A. 4/10—Michigan Bell Telephone Co., 1365 Cass St., Detroit, 2 story, bsmnt., brick, steel, concrete telephone central office, $300,000, Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts.

▲ Mich., **Coldwater**—STATE BUILDING—B.A. 4/16—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, 2 story, bsmnt., rein.-con., brick physically handicapped state bldg., Coldwater State Home & Training School. $1,100,000. Plans deposit $25, Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit, archt. CD 9/21/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

INDIANA—State Hy. Comn., Indianapolis.

J. L. Wilson, Bloomfield, Ind., LB, $132,104 3 span 100 ft., rein.-con. continuous slab bridge 40 ft. roadway, two 6 ft. walks, no piling over French Lick Creek 0.5 mi. N. of State Rd. 145 and 0.085 mi. approach grading, c.conc. pavement, French Lick, Orange Co.; LB, $176,398 combination of 2 span 130 ft. rein.-con. arch bridge, 28 ft. roadway, 2 walkways, no piling, over approach grading, c.conc. Rural District, Vigo Co. and 1 span 40 ft. rein.-con. arch bridge 39 ft. roadway untreated timber piling over Honey Creek, 2.8 mi. S. of Terre Haute, 0.076 mi. approach grading, c.conc. Rural District, Vigo Co.;

Winslow Constr. Co., Salem, Ind., LB., $274,529 combination of 5 span 250 ft. steel beam, rein.-con. girder bridge 30 ft. roadway, two 2 ft. walkways steel enclosed concrete pile bents, over Mill Creek and U.S. Rd. 31, 0.3 mi. N. of Clarksville, Clark Co. and 1 span 30 ft. rein.-con. arch bridge, 46 ft. roadway, no piling over Mill Creek, rein.-con. box culvert, 3 spans 24 ft. long, 46 ft. roadway no poling, over Mill Creek, N. of Clarksville, Clark Co.;

R. L. Schutt Co., 215 E. New York St., Indianapolis, Ind., LB $96,764, combination of 1 span 40 ft. rein.-con. girder bridge 29 ft. roadway, untreated timber piling over Silver Ditch 2.8 mi. N. of State Rd. 14 0.106 mi. approach grading and c.conc. Rural District Jasper Co. and 3 span 80 ft. rein.-con. continuous slab bridge 28 ft. roadway, untreated timber (piers) piling, treated timber pile and bents, over Wheatfield Ditch 1.6 mi. S. of State Rd. 10 and 0.106 mi. c.conc. pavement and approach grading, Rural District, Jasper Co.;

L. H. Gunsaulles & Son, Kendallville, Ind., LB $101,222 1 span 40 ft., rein.-con. girder bridge 28 ft. roadway, two 2 walkways, no piling over Wesau Creek, 01 mi. W. of Denver, 0.546 mi. approach grading, b. compacted aggregate surf. near Denver, Miami. Co.;

J. S. Sweet, Cambridge City, Ind., LB, $89,520, repairing 4 span 373 ft. bridge, new steel beam, new flooring, painting, over Flat Rock, St. Louis Crossing, Bartholomew Co. Bids Mar. 25. CD 3/12.

Montague Constr. Co., 228 N. La Salle St., Chicago, 1, Ill., LB, $628,000, water filtration works addn., GLENCOE, ILL. Village Glencoe, Ill. Bids Mar. 13. CD 2/4.

WISCONSIN—State Hy. Dpt., Madison,

Rock Road Construction Co., 5711 Winneopah Rd., Madison, Wis., $149,978, Contr. 1, b.conc. 4.55 mi. The Dairies-S.T.H. 11 and Walworth St. (City of Delavan) Road, U.S. Hy. 14 and S.T. Hy. 11, Proj. T 033-1 (5) and T 014-3 (16), Walworth Co.;

White Consolidated, Inc., 710 N. Plankinton Ave., Milwaukee, Wis., LB, $146,244, Contr. 1, conc. base and b.conc. 0.8 mi. Crooks St. (City of Kaukauna), S.T. Hy. 55, Proj. U 32-32 (2), Outagamie Co.;

John F. Bloomer Co., Appleton, Wis., LB, $316,826 Contr. 1, b.conc. 9.793 mi. The Nenomoni-Eau Claire Road, U.S. Hy. 12, T 06-4 (21) and T 06-4 (22), Dunn and Chippewa Counties;

Ashworth & Son Co., St. Louis Park, Minn., LB, $273,079 Contr. 1, b.conc. 6.01 mi. the Lincoln Street (Village of Fall Creek) and Eau Claire-Fall Creek Road U.S. Hy. 12, Projs. T 06-4 (15) and T 06-4 (18), Eau Claire Co.;

Mathey & Thornton Constr. Co., 508 Hoeschler Bldg., La Crosse, Wis., Lb $187,484, Contr. 1, b.conc. 6.294 mi. The Hudson-Menomonie Road, U.S. Hy. 12, Proj. T 06-4 (19) and T 06-4 (20), Dunn and St. Croix counties;

Alexander Constr. Co., 4641 Hiawatha Ave., Minneapolis, Minn., LB, $214,637, Contr. 1, b.conc. 12.982 mi. The Brule River-Menominee Rd., U.S. H., 2 Proj. T 041-1 (4), Florence Co.;

Streu Constr. Co., Two Rivers, Wis., LB, $83,199, Contr. 1 grav. or crushed stone base course 5.735 mi. The Rhinelaind-Eagle River Rd., S.T. Hy. 17, Proj. T 0287 (3), Oneida Co. Bids Mar. 25. CD 3/7.

▲ **MICHIGAN**—State Hy. Comn., 222 Townsend St., Lansing. Zone 1.

Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich., and **Charles J. Rogers, Inc.**, 14836 Grand River St., Detroit, Mich. LB $1,241,467, est. $1,320,000, drainage, paving relocation utilities and signal sys. on John C. Lodge Expressway, UI 82-127 C71 (U) 404 (4), Wayne Co.;

Mid-America Engineering Corp., St. Joseph, Mich. LB $494,483, est. $490,000, b. conc. aggregate surf. US-27, US-10 M-61, and M-115, M 26-19 C5 (F 170 111), etc., Clare and Gladwin Counties;

Gould & Cross, 3849 Three Mile Rd. N. E., Grand Rapids, Mich. LB $340,243, est. $340,000, aggregate surf. M 6.8 mi. US-25, F 32-49 C1 (F 198 3), Huron Co.;

Wright Constr. Co., Williamston, Mich. LB $264,655, est. $255,000, b. conc. 13,908 mi. M-78, M 76-23 C8, Shiawassee Co.;

Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. LB $268,459, b. conc. 11.9 mi. US-25, M 50-24 C13, M 57-4 C7, St. Clair and Macomb Counties; LB $285,512, b. conc. 8.6 mi. US-25, M 50-2 C51, M 50-24 C14, Macomb Co.;

Ivan W. Schworm Co., Traverse City, Mich. LB $229,792 est. $230,000 stabilized aggregate 6.909 mi. M-31, 0.381 mi. 6 in. edge drain sewer on M-37, F 83-19 C8, (F 409 2) etc., Wexford Co.;

Hodgson & Douma, Petoskey, Mich. LB $133,324 est. $135,000, bit. aggregate surf. 6.749 mi. M-68 and US-27, M 16-2 C4, Cheboygan and Presque Isle Counties. Bids Mar. 19. CD 3/5 and 3/12.

Otto Taylor Constr. Co., Inc., 613 N. Woodbridge St., Saginaw, Mich. CA $84,800, 66 in. sewer main, South End sect., BAY CITY, MICH. City, Dpt. P. Wks., Bay City, Mich. CD 2/29.

BUILDINGS

LOW BIDS AND CONTRACTS

Marmen Homes, Inc., N. L. Mercur, pres., 523 S. Main St., Akron, O., Owner builds. Approx. $500,000. 40 HOMES in vicinity of Carnegie, Cory, Sutherland land Wingate Aves. in Kenmore Dist., AKRON, O.

▲ **Jonathan Woodner Co.**, Enquirer Bldg., Cincinnati 1, O., Separate Contracts. $10,000,000. 5 story APARTMENT, 1 large DEPARTMENT STORE, 25 or 30 small SHOPS, etc., CINCINNATI, O. Ketchum, Gina & Sharp, 227 E. 44 St., New York, N. Y. archts. CD 3/6/52.

▲ **Sumner Sollitt Constr. Co.**, 309 N. Michigan Ave., Chicago 1, Ill., CA $4,195,885, 6 story bsmnt., steel brick, DENTISTRY, MEDICAL, PHARMACY bldg., CHICAGO, ILL. University of Illinois, Wood and Polk Sts., Chicago, Ill. Bids Feb. 19, awarded Mar. 17. CD 2/29, under LB.

John Traff Bldg. Constr. Co., 3735 N. Clark St., Chicago 13, Ill., LB, $937,509, High SCHOOL, LAKE ZURICH, ILL. School Dist. 125, Lake Zurich, Ill. Bids Mar. 17. CD 3/5.

▲ **Contractors & Builders, Inc.**, 228 N. LaSalle St., Chicago 1, Ill., CA, $1,000,000, 60 HOMES near Cortland and Higgins, PARK RIDGE, ILL. Owner, c/o contractor, A. J. Del Bianco, 5501 W. Irving Park Blvd., Chicago 41, Ill., archt. Awarded Mar. 18.

M. H. Wolfe & Son, 20 and Adams St., Granite City, Ill., CA, $504,827, general contract, 2 story, 62x130 ft., 90x36 ft., 36x28 ft. and 1 story, 96x124 ft., 47x27 ft., Community HIGH SCHOOL addns., ROXANA, ILL. Roxana Unit School Dist. 1, High School, Chaffer and Tydeman Aves., Roxana, Ill. Bids Feb. 28. CD 3/7, under LB.

▲ **J. L. Altman & Co.**, 17641½ State St., East St. Louis, Ill., CA, $1,045,235, Proj. Ill. 15-7, 100 DWELLING UNITS and 1 MAINTENANCE BLDG.;

M. H. Wolfe & Co., 1877 Pontoon Rd., Nameoki, Ill., CA $534,600, Proj. Ill. 15-9, 50 DWELLING UNITS and 1 MAINTENANCE BLDG., VENICE, ILL. Madison

County Housing Auth., D. F. Braner, exec. dir., 3 and Haller Sts., East Alton, Ill. Bids Jan. 11. CD 1/21, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 17, Montana
STREETS AND ROADS
April 16, Texas April 17, Montana

Minn., Minneapolis—PAVING—B.A. 4/8—Minneapolis—St. Paul Metropolitan Airports Comn., R. Aldrich, exec. dir., 2429 University Ave., St. Paul, 27,200 sq. yd. c. conc. pavement removal, 62,860 cu. yd. common excav., 26,700 sq. yd. 11 in. c. conc. paving, 31 manholes, catch basins, 41,800 sq. yd. 1½ in. bit. surf., 1,900 lin. ft. 72 in. chain link fence, $100,000. Plans deposit $10, Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, engrs. CD 5/16/51.

BIDS ASKED—BUILDINGS

† **Tex., Sherman**—OFFICERS QUARTERS—B.A. 4/15—U. S. Eng. Box 61, Tulsa 2, Okla., bachelor officers quarters, Inv. No. Eng. 34-066-52-54. Approx. $300,000. Extended date. CD 3/25.

Colo., Adams—SCHOOL—B.A. 4/18—School Dist. 14, Adams City, 2 story, bsmnt., 130x60 ft., brick high school addn., $495,000. Alfred Wats Grant, 1669 Broadway, Denver, Colo., engr. and archt. CD 3/7.

Mont., Missoula—CLASSROOM—B.A. 4/23—State, Bd. Examiners, Helena, classroom bldg., Montana State University, $700,000, J. G. Link & Co., Butte, archts. CD 10/23.

Tex., Arlington—STUDENT UNION—B.A. 4/24—Arlington State College, Arlington, student union. Approx. $300,000. Plans deposit $50. Tatum & Quade, 2812 Fairmount St., Dallas, archts. CD 9/30/49.

Tex., Stephenville — DORMITORY — B.A. 4/25 —John Tarlton Agricultural College, Stephenville, 3 story, masonry men's dormitory. $300,000. Plans deposit $25. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, engr.-archt. CD 11/29/49.

Tex., College Station — PHYSICAL EDUCATION—B.A. 4/29—A & M College of Texas, College Station, 3 story, 60,800 to 98,000 sq. ft., steel, concrete, masonry physical education bldg., $684,000. Plans deposit $75. Bartlett Cocke, 3501 Broadway, San Antonio, archt., W. E. Simpson Co., 945 Milam Bldg., San Antonio, engr. CD 2/10/50.

Tex., Angleton—HOUSING—Bids Asked—Federal Housing Admin., 1114 Commerce St., Dallas, 75-rental housing units.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Central States Constr. Co., Crosby, Minn. CA $688,742, conc. 11.2 mi. between Euclid and 1.2 mi. north of Jct. TH 2, Polk Co. CD 3/20, under LB.

▲ † **C. F. Lytle Co.**, 250 Insurance Exchange Bldg., Sioux City, Ia., LB $1,868,862, est. $1,845,434, construct Jamestown Dam, Missouri River Basin Proj. Spec. DC-3656, NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bismarck, N. D. Bids Mar. 18. CD 2/7.

▲† **Baldwin-Lima-Hamilton Corp.**, 60 E 42 St., New York, N. Y., CA $3,009,560, turbines for Gavins Point Reservoir Proj., Inv. 52-65, near Yankton, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 11. CD 3/13, under LB.

▲ **NEBRASKA**—State Dpt. Roads & Irrigation, Lincoln, Abel Constr. Co., 1815 "Y" St., Lincoln, Neb., LB $427,777, gravel, pave, guard rail, F-23—Oakland-Tekamah, Burt Co.; LB $102,769, stabil. soil B.C. and prep subgrade, armor coat, bit. mat, S0176—Maywood-Curtis, Frontier Co.;

Missouri Valley Constr. Co., Omaha Natl. Bank Bldg., Omaha, Neb., LB $161,536, crushed limerock, prep. road bed, b. conc. F-328—Franklin south, Franklin Co.; LB $65,723, grav., paving, culvert, bridge S-74—Springfield west, Sarpy Co.; LB $124,494, grav., subbase, rock B.C., prep. roadbed, b. conc. BS and S.C., F-71 and SF-66961, Orleans East, Harlan Co.;

Dobson & Robinson, 823 First Natl. Bank Bldg., Lincoln, Neb., LB $221,937, grav., paving, culvert, sodding F-469—Snyder east, Dodge Co.;

Theisen Bros., Osmond, Neb., LB $111,792, grav., culvert, F-42—Sargent-Taylor, Custer and Loup Counties;

Nichols Constr. Co., Geneva, Neb., LB $153,653, armor coat, bit. stabil. base, prep roadbed, bit. mat. F-85, North Loup-Ord, Valley Co.;

H. W. Johnson, South Sioux City, Neb., LB $130,250, grav., gran. subbase, prep roadbed, armor bit. stabil. bit. mat. S-128, SF-36633—Wakefield-Allen, Dixon Co.;

F. R. Orshek Co., Fremont, Neb., LB $140,118, grav., gran. sub-base and prep roadbed, soil-cement, armor coat, bit. stabil. bit. mat. F-302, Bancroft east, Burt Co.; LB $324,345, grav., paving, culvert, sodding F-453 and 454, Tecumseh-Syracuse, Johnson Co.;

M. M. Lippincott, Hastings, Neb., LB $139,029, com. grav., gran. sub-base and prep roadbed, soil-cement, armor, bit. stabil. bit. mat. F-311—Red Cloud south, Webster Co.;

Diamond Eng. Co., Grand Island, Neb., LB $62,419, grav., bridge, SF-36612, Morrill south, Scottsbluff Co. Bids Mar. 20. CD 3/12.

Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, Tex., Force Account, $434,700, laying 32 mi. underground telephone cable line between Terrell and Dallas; $124,000, laying underground telephone cable line from McKinney to Dallas-Holdenville, Okla., cable line, TEXAS. CD 3/19.

▲ **MONTANA**—State Hy. Comn., Capitol Bldg., Helena,

Nilson-Smith Constr. Co., 812 Second St., Great Falls, Mont. CA $228,513. surf., oil 18.396 mi. Hogan-Simms Hy., Lewis & Clark and Cascade Counties;

McLaughlin, Inc., Ford Bldg., Great Falls, Mont. CA $549,128. grav., oil, drain 10.464 mi. Three Forks-Townsend Rd., Broadwater Co.;

McKinnon-Decker Constr. Co., Helena, Mont. CA $351,-862. grav., oil, drain 7.714 mi. Estrbridge-Shelby Rd., Toole Co.

Charles Shannon, Butte, Mont. CA $296,664. grav., bit. surf. drain 4.565 mi. Bearmouth-Deer Lodge Rd., Powell Co.;

L. A. Woodard & Ed Tangmo, Missoula, Mont. CA $367,-932. grav., oil, drain 7.011 mi. Missoula-Arlee Rd., Missoula Co.;

Naranche & Konda, Butte, Mont. CA $259,612. grav. 14.99 mi. Idaho line-Armstead Rd., Beaverhead Co.

O'Brien Constr. Co., 1127 Smelter Ave. Black Eagle St., Great Falls, Mont. CA $86,971. grav., oil 5.221 mi. Winnett-south Road, Petroleum Co. Grand total $2,140,682. Bids Mar. 20. CD 3/12.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Winston Bros. Co.**, N. W. Bank Bldg. and **C. F. Haglin & Sons**, 123-Bryant Ave. N., Minneapolis, Minn. and **Missouri Valley Constr. Co., Inc.**, Box 801, Leavenworth Kan. and **Sollitt Constr. Co., Inc.**, 301 Columbia St., South Bend 24, Ind., CA, $8,558,000, 190 high EXPLOSIVE MAGAZINES and DETONATOR MAGAZINES for Naval Ammunition Depot, Spec. 32949, SHUMAKER, ARK. Dpt. Navy, Dist. P. Wks., Eighth Naval Dist., U. S. Naval Station Bldg. 16, New Orleans, La. Bids Mar. 14. CD 3/18, under LB.

McCarthy Bros. Constr. Co., 4903 Delmar St., St. Louis, Mo. CA $494,000. general contract 2 story HOSPITAL addn., WICHITA, KAN. St. Joseph's Hospital, 3400 Grand St., Mt. St. Mary, Wichita, Kan. Maguolo & Quick, 4908 Delmar St., St. Louis, Mo., engrs. and archts. CD 9/28/50.

▲† **McKenzie & Assoc.**, 6419 Maple St., Dallas, Tex., LB $2,921,000, est. $2,500,000. 23 F and D BUILDINGS and 58 HE MAGAZINES at Naval Depot, McALESTER, OKLA., Dpt. Navy, Pub. Wks. Office, Bldg. 16, New Orleans, La. Bids Mar. 4. CD 2/5.

T. C. Bateson Constr. Co., 618 Irwin-Keasler Bldg., Dallas, Tex. CA $883,746. Tex. 17-3, 147 DWELLING units, GALVESTON, TEX. Galveston Housing Auth., City Hall, Galveston, Tex. Bids Mar. 20. CD 3/3.

Owners, c/o Reuben Herren, Harlingen, Tex., Own Forces. Approx. $425,000, 60 DWELLINGS, HARLINGEN, TEX. CD 2/15.

L. W. Nelms, 71 E. Burgess St., Houston, Tex., Owner Builds. $467,500, Proj. 2, 50 DWELLINGS, HOUSTON, TEX. F. Perry Johnston, 3908 Main St., Houston, Tex., archt.

J. S. Norman Building Corp., c/o J. S. Norman Jr., 4815 Richmond Rd., Houston, Tex. Owner Builds. Approx. $585,000. Job. 55 frame DWELLINGS, concrete slab fdn. HOUSTON, TEX. CD 1/24.

▲ **Wilshire Oil Co. & Lone Star Gas Co.**, 1915 Wood St., Dallas, Tex., Own forces. Approx. $2,500,000. natural gasoline PLANT, near RANKIN, TEX. CD 3/20.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 22, Washington
STREETS AND ROADS
April 16, 17, 18 California

BIDS ASKED—BUILDINGS

▲ **Calif., Palo Alto**—PLANT—B.A. 4/15—Verian Associates, c/o Eric Mendelsonn & Michael A. Gallis, archts., 627 Commercial St., San Francisco, (selected list of bidders), electronic plant, $1,000,000. CD 1/2/19.

▲ **Calif., Sacramento**—RECEPTION CENTER—B.A. 4/29 State Div. Architecture, P. Wks. Bldg., 13-rein.-con. Northern California Reception Center and Clinic Institute Bldgs. for California Youth Authority. Plans deposit $100. CD 9/12/4.

▲† **Calif., Camp Pendleton**—HOUSING—B.A. 5/1—Dpt. Navy, San Diego, 546 family dwelling units, Marine Housing, Oceanside, $5,000,000. Plans deposit $200. John N. Douglas, 1041 E. Green St., Pasadena, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IDAHO—State Hy. Dpt., Boise,

Western Constr. Co., 1695 Yellowstone Ave., Pocatello, Idaho, LB $98,292, constr. roadbed, crushed grav. surf. 6.402 mi. and bridge repairs, Bear Lake Co.;

Carbon Brothers, N. 3430 Cook St., Spokane, Wash., LB $305,186, roadway, bit. mix surf. 7.506 mi. Lewis Co. Bids Mar. 11. CD 2/28.

▲ † **Valley Constr. Co.**, 7708 Rainier Ave., Seattle, Wash., LB $1,067,124, est. $1,292,382, 44,000 ft. 8- to 72-in. sanitary and storm sewers; 19,800 ft. water system, b. conc. streets, etc. for permanent troop facilities, ENG 45-108-52-166, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Mar. 20. CD 2/27.

Brown Boveri Corp., 19 Rector St., New York, N. Y., LB, $164,650, (1) three 230,000 volt circuit breakers LB, $151,000 (2), alternate, three 230,000 volt circuit breakers, 1,200-ampere, 7,500,000 kva interupting rating, Central Valley Proj. Spec. DS-3655 CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Mar. 18. CD 2/6.

† **Consolidated Western Steel Div. of U. S. Steel**, 141 Battery St., San Francisco, Calif., LB $792,632 fabricate 8 sets tainter gates, etc. for Folsom Dam, Spec. 1593, CIVENG PR 167-52-34, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Mar. 20. CD 3/14.

† **Fred D. Kyle**, 3617 San Pasquel St., Pasadena, Calif., and **Zimmer Constr. Co.** 1227 S. La Brea St., Los Angeles, Calif. LB, $906,953, central heating plant and steam distr. sys., first increment at Naval Auxiliary Air Station NOY 28035, Spec. 29716, MIRAMAR, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids Mar. 20. CD 3/6.

BUILDINGS

LOW BIDS AND CONTRACTS

Burch Constr. Co., 707 N. Vine St., Los Angeles, Calif., LB, $419,989, 1 story frame, stucco Slauson SCHOOL, AZUSA, CALIF. Azusa City School Dist., 340 W. 5 St., Azusa, Calif. Bids Mar. 18. CD 3/4.

▲ **Pozzo Constr. Co.**, 2403 Riverside Dr., Los Angeles, Calif., CA, $1,545,208, 4 story, rein.-con., St. Joseph's HOSPITAL addns., BURBANK, CALIF. Sisters of Charity of the House of Providence, 501 S. Buena Vista, Burbank, Calif. Bids Feb. 15. CD 2/25, under LB.

Larsen-Ratto Constr. Co., 1901 Hedges Ave., Fresno, Calif., LB, $582,216, SCHOOL, near FIVE POINTS, CALIF. Westside Elementary School Dist., P. O. Box 455, Five Points, Calif. Bids Mar. 19. CD 3/4.

▲ **Robert E. McKee**, 4700 San Fernando Rd., West Los Angeles, Calif., LB, $2,458,100, RECEIVING and ACUTE TREATMENT PLANT at Patton State Hospital, PATTON, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Mar. 18. CD 2/7.

Wm. E. Burnett, c/o Paul J. Duncan, archt., 13310 Magnolia St., Sherman Oaks, Calif., Owner Builds, $304,700, 34 stucco DWELLINGS, Shirley Pl., Caswell St., Verde Vista Ave., etc., POMONA, CALIF.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

† **Reed & Martin**, Fairbanks, Alaska, CA, $556,325, SCHOOL, EIELSON AIR FORCE BASE, ALASKA. U. S. Housing & Home Finance Agency, New World Life Bldg., Seattle 4, Wash. Bids Mar. 19. CD 3/5.

† **Reed & Martin**, Fairbanks, Alaska, CA, $544,223, SCHOOL, LADD AIR FORCE BASE, ALASKA. U. S. Housing & Home Finance Agency, New World Life Bldg., Seattle 4, Wash. Bids Mar. 19. CD 3/5.

† **S. Patti Co. & McDonald Constr. Co.**, Anchorage, Alaska, LB $643,191, est. $518,827. 1 story, 23x83 ft. rein.-con. RECEIVER BLDG., 2 story, 24x90 ft., bsmnt., FAMILY QUARTERS at Site A; 20x63 ft. rein.-con. POWER PLANT at Site B; 3 story, 62x97 ft. rein.-con. TOOL AND BLDG., 25x96 ft. frame WAREHOUSE and 24x180 ft. 2-story FAMILY QUARTERS at Site C, all for ASC facilities, ENG 95-507-52-45, near ANCHORAGE, ALASKA. U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska, Bids Mar. 18. CD 2/25.

U. S. POSSESSIONS

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Tecon Corp.**, 1201 Main St., Dallas, Tex., LB $2,699,527, parking stubs, connecting taxiways and strengthening pavement, Ramey Air Force Base, Serial No. ENG 08-123-52-108, AGUADILLO, PUERTO RICO. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Mar. 19. CD 2/18.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Toronto—HOUSING—B.A. 4/15—Central Mortgage & Housing Corp., 441 Queen's Quay W., 66 housing units at Downsview, air force base, $660,000. Plans deposit $100. R. P. Opie, c/o owner, regional engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Simard & Frere Cie Ltee, First Ave. W., Amos, Que. CA $560,000, 52x260 ft., rein.-con., brick Ste. Therese School, AMOS, QUE. School Comn., Amos, Que., J. C. Fortin, 240 4 Ave., Val d'Or, Que., archt.

L. B. Magil Co., 5275 Queen Mary Rd., Montreal, Que., Owner Builds, $350,000, 10 two story, 25x25 ft., rein.-con., brick DWELLINGS, Church St., St. LAURENT (Postal Dist. Montreal) QUE.

(Proposal Advertisements see pp. 119 to 121)

OFFICIAL PROPOSALS

Bids Asked April 22, 1952

Ten Gravel Barrel Wells & Pumping Stations

Sealed bids will be received until 9:00 A.M. EST, April 22nd, A.D., 1952, by the City Commission in the City Commission Chambers at Fort Lauderdale, Florida for "Ten Gravel Barrel Wells and Pumping Stations".

Bidding blanks may be obtained from office of the Engineer. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications, and of $25.00 each for additional copies of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids.

H. M. LINK
City Engineer

Bids: April 15, 1952

River Pumping Station

Sealed proposals will be received at the office of The Morgantown Water Commission at 213 Fayette Street, Morgantown, West Virginia, until 5:00 P. M. Eastern Standard Time on April 15, 1952, for the performing of the following items of work at River Pumping Station, Morgantown, West Virginia:

1) Construct filters and piping
2) Construct filter superstructure
3) Remove two wood tanks
4) Convert steel tank to clarifier
5) Remove existing piping
6) Install yard piping and drains
7) Install chemical treatment equipment and foundations
8) Reconstruct chemical feed room
9) Install chemical feed lines

Copies of Specifications may be obtained at the Commission office on and after March 26, 1952. A deposit of $50.000 will be required for each set of plans.

Each proposal shall be accompanied by a certified check in an amount not less than ten (10) percent of the total bid, in accordance with the provisions contained in the specifications or a satisfactory bid bond in like amount.

The Morgantown Water Commission reserves the right to reject any or all bids or to accept any bid which it deems to its best interest.

THE MORGANTOWN WATER COMMISSION
MORGANTOWN, WEST VIRGINIA

Bids: April 17, 1952

Route 4, Parkway, Sections 6F, 7E & 8C

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of Route 4 Parkway, Sections 6F, 7E & 8C, Paving, from Centennial Avenue to Galloping Hill Road, Cranford Township and Borough of Kenilworth, Union County. Federal Project No. U-188(26). Length 2.708 miles. The principal items of construction are:

Estimated:
- 14,613 cu. yds. Roadway Excavation—Earth
- 35,884 cu. yds. Subbase
- 46,982 sq. yds. Penetration Macadam Surface Course
- 515 tons Bituminous Concrete Surface Courses
- 84,651 sq. yds. 8" Plain Conc. Pavement Surface
- 7,173 sq. yds. 9" Rein. Conc. Pavement Surface
- 3,277 sq. yds. 13" Aver. Rein. Conc. Pavement Surface
- 2,404 sq. yds. Bridge Approach Slabs
- 2,431 lin. ft. Rein. Conc. Culvert Pipes
- 23,257 lin. ft. White Concrete Curbs

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, April 17, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service 268 North Broad Street, Elizabeth, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: April 30, 1952

San Juan-Bayamon Road

GOVERNMENT OF PUERTO RICO
DEPARTMENT OF THE INTERIOR

March 31, 1952

The Board of Awards of the Department of the Interior of Puerto Rico, will receive sealed proposals for the construction of 0.605 Km. = 0.376 Miles of Project U-2-1 (1) Saint Juan-Bayamon Road (Martin Peña Channel Bridge), Municipality of San Juan, Puerto Rico.

Bidders shall submit their proposals at the office of the Board of Awards in the Department of the Interior, San Juan, Puerto Rico, until 2:00 P.M. (Puerto Rico time) on April 30, 1952, at which time and place said proposals will be publicly opened and read aloud.

Attention is called to bidders from the Continental United States, that their proposals must be received at the office of the Board of Awards in the Department of the Interior, San Juan, Puerto Rico prior to the time of the opening of bids.

Plans, specifications, instructions to bidders, and all necessary information may be obtained at the office of the Procurement and Contracts Division, Department of the Interior, 206 Ponce de Leon Avenue, San Juan, Puerto Rico, and at the office of Dr. D. B. Steinman, Consulting Engineer, Roebling Building, 117 Liberty Street, New York 6, N. Y. upon a deposit of two hundred ($200.00) DOLLARS in cash, money order or certified check payable to the Commissioner of the Interior of Puerto Rico until April 23, 1952, 5:00 P.M. o'clock, local time. The full amount of the deposit will be refunded to each depositor upon the return of the plans and specifications in good condition to the Commissioner of the Interior, San Juan, Puerto Rico, within twenty (20) days after the opening of the bids.

The names, location and approximate quantities of major items for this project are as follows:

PART I
PROVISIONAL DETOUR TIMBER TRESTLE BRIDGE OVER MARTIN PENA CHANNEL ON INSULAR ROAD NO. 2

Crushed Stone	5,100 CuM
Selected Borrow Material	94,700 CuM
Vertical Sand Drains	8,200 LnFt
Timber Piling	11,800 LnFt

PART II
PERMANENT STEEL AND CONCRETE BRIDGE OVER MARTIN PENA CHANNEL ON INSULAR ROAD NO. 2

	ALT. "A"	ALT. "B"
Unclassified Excavation	8,500 CuYd	8,500 CuYd
Excavation for Structure	2,900 CuYd	2,700 CuYd
Selected Borrow Material	1,600 CuYd	1,600 CuYd
Concrete	7,300 CuYd	7,100 CuYd
Structural Steel	4,400,000 Lbs	4,400,000 Lbs
Reinforcing Steel	840,000 Lbs	780,000 Lbs
Timber Piling	98,700 LnFt	8,000 LnFt
Steel Piling	6,400 LnFt	6,400 LnFt
Concrete Piling		51,300 LnFt

This project is eligible for an allotment of controlled materials as needed, under N. P. A. regulations.

Proposals must be submitted with Part I and Part II completely filled out, since both together constitute the Contract.

Each proposal must be accompanied by a certified check or bid bond in the amount of ONE HUNDRED THOUSAND ($100,000.00) DOLLARS, payable to the Commissioner of the Interior, San Juan, Puerto Rico.

The Board of Awards reserves the right to accept any bid or to reject any or all bids to waive informalities and to award the contract under the conditions found most favorable to the People of Puerto Rico.

Sgd.
ROBERTO A. SANCHEZ VILELLA
Commissioner

U. S. Government

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota. —Sealed bids, in duplicate, for furnishing all labor and materials and performing all work required for Stone Protection at Homme Dam, Stage No. 2, Park River, North Dakota, will be received in this office until 2:00 P.M., C.S.T., April 22, 1952, and then publicly opened. Further information upon application.

BIDS FOR PATROL BOAT—Memphis District Corps of Engineers, U. S. Army, P.O. Box 97, Memphis 1, Tenn. Sealed bids will be received here until 11:00 a.m., C.S.T., April 22, 1952, and then publicly opened for construction of a steel, Diesel, twin-screw, 115-foot patrol boat. $10.00 deposit required on plans. Information on request.

Department of Commerce, Bureau of Public Roads, March 25, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., APRIL 25, 1952, for Project 1E2, Baltimore-Washington Parkway, Prince Georges County, Maryland, Bridge at Beaverdam Road, Two Box Culverts and Approach Grading. The approximate quantities of the more important items are: 26,590 cu. yd. Excavation, 2,295 cu. yd. Cement Concrete, and 364,000 lb. Reinforcing Steel. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

Bids: May 6, 1952

Reinforcing Mains

Office of City Purchasing Agent
Nashville, Tennessee

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at the office of the Purchasing Agent, until 10:00 A.M., Central Standard Time, on Tuesday, May 6, 1952, for 30" and/or 24" Reinforcing Mains on Cherry Avenue, Chestnut Street, 9th Avenue South, Edgehill Avenue, 10th Ave. South, 11th Avenue South, 21st Ave. South and Garland Avenue, including all cross-connections, valves, fittings and appurtenances, as well as special cross-connection and by-pass at Merritt Street and Hagan Street, according to the plans and specifications which are on file in the Office of the Director of the Nashville Waterworks Department, Room 201 City Hall, Nashville, Tennessee, and also the office of The Chester Engineers, 210 East Parkway, Pittsburgh 12, Pennsylvania. Immediately after closing time for the receipt of bids, they will be publicly opened and read aloud in the office of the Purchasing Agent, City Hall.

The successful bidder will be required to furnish satisfactory Performance Bond and Labor and Materialmen's Bond.

All bids shall be made upon the blank forms of the contract documents. Copies of all contract documents, including Proposal Form, Contract Plans and Specifications and Instructions to Bidders, may be obtained at the office of The Chester Engineers by depositing Twenty-five Dollars ($25.00) for each set of documents so obtained. The entire deposit will be refunded to each actual bidder, and Fifteen Dollars ($15.00) will be returned to all others who return plans and specifications in good condition within ten (10) days after opening of bids.

The right is reserved by the City of Nashville, through its Mayor, to reject any and all bids, to waive any informalities in the bids received, and to accept any bid which, in its opinion, may be for the best interest of the City.

A certified check or bank draft, payable to the City of Nashville, or a satisfactory bid bond executed by the bidder and a Surety Company authorized to transact business in the State of Tennessee, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid.

No bid may be withdrawn after the schedule time for the receipt of bids.

CITY OF NASHVILLE, TENNESSEE
E. B. SMITH, Purchasing Agent

Monrovia, Liberia, West Africa Water Works and Sewerage System

Proposals for the construction of a water works and sewerage system for Monrovia are invited by the Department of Public Works and Utilities, Republic of Liberia. Contractors shall register their intention to bid with a deposit of $500, returnable to those submitting bids.

The work will consist of infiltration supply system, pumping station, 600,000 gallon reservoir, water mains (18,000 ft.—16", 70,000 ft.—4" to 12"), 50,000 ft. of sewers 6" to 24", and appurtenances. Plans and specifications of the proposed works may be examined in Monrovia, or at the office of the Consulting Engineers in New York. The Liberian Government has on hand and will furnish cast iron pipe, fittings, valves and hydrants, and will furnish on a rental basis major construction equipment items.

Contractors may obtain information from and register with the undersigned, or Hazen and Sawyer, Engineers, 110 E. 42nd Street, New York 17, N. Y.

HENRY B. DUNCAN
Secretary, Dept. of Public Works
& Utilities
Republic of Liberia

CONTRACTORS WATCH THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: April 16, 1952

New York State Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.—Pursuant to the provisions of the Highway Law, the Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on April 16, 1952, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		LACY KETCHUM, 109 No. Genesee St., Utica 1, New York				
Fulton	FARC 52-26	Proj. F216(2); F604(3); F419(4) Mayfield Village, S. H. 5194 Mayfield-Northville Pts. 1 & 2, S. H. 363-541 Northville-Chapmans Corners, S. H. 362	4.96	9" Cem. Conc. Pavt. 24' Wide = 4.89 mi. Asp. Conc. Ty. 1A, Opt. = 0.07 mi.	$36,000 Plans $15	$645,000
Montgomery	RC(M. T.) 52-30	Northville Village, North, S. H. 5065 Canajoharie-Fultonville, Pt. 2, S. H. 8371 (Relocated for N. Y. State Thwy.-The Mohawk Sect.-Sub. 14)	4.63	Asp. Conc. Ty. 1A, Opt. Twin Box Br. 41'-6" Sp.	$27,000 Plans $15	492,000
Oneida	FASS 52-1	Proj. S-363(1), Steuben-Remsen Co. Rd.	3.99	D. S. Treat. Graded Grav.	$9,500 Plans $15	172,000
Madison	M. T. 52-3 M. T. C. 52-4 S. T. 52-7 R. C. 52-33	N. Y. S. Thruway-The Mohawk Section-Subdivision 2 & 3 (1.31 Access) and City of Oneida (Court St. Co. Rd.; Canastota-Durhamville Co. Rd.; Schoolhamner Rd. Cut-off) & Canastota Village S. H. 908	7.22	9" Cem. Conc. Pavt. 2 @ 25 Wide & Var. = 6.25 mi. Asp. Conc. Ty. 1A Opt. = 2.06 mi. D. S. T. Grad. Grav. = 0.22 mi. Hv. Sep. 4 Sp. Alpha I-Beam 230' 2 Sp. Alpha I-Beam 54' ea. Hv. Sep. 4 Sp. Alpha I-Beam 211' Hv. Sep. 4 Sp. Alpha I-Beam 277' Twin Box R. C. Culv. Type Br. 2 @ 16'-3" Hv. Sep. 4 Sp. Alpha I-Beam 203'-7" ALPHA ROYALTY = $1,149.84	$200,000 Plans $100	$3,457,000
		DISTRICT No. 3				
		WM. ROBINSON, Weigh Lock Bldg., Syracuse 1, New York				
Onondaga	O. T. 52-4 S. T. 52-4 R. C. 52-32	New York State Thwy.-The Ontario Section-Subdivision 7 (Warners-Liverpool) Cold Spring-Liverpool S. H. 670 2 Marginal Hvs.; Co. Rd. 64; Co. Rd. 31; Co. Rd. 194; Relocating Onondaga Lake Parkway	9.67	9" Cem. Conc. Pvt. 2@25' Wide & Var. = 7.22 mi. Asp. Conc. Ty. 1A, Opt. = 2.38 mi.; Misc. Work = 0.07 mi.; Hy. Sep. Alpha I-Beam 4 Sp. 72', 2@108', 60' Hy. Sep. Alpha I-Beam 4 Sp. 32'-7", 2@63'-3", 2@7'-4" Hy. Sep. Alpha I-Beam 4 Sp. 50'-4½", 2@79'-1½", 42'-4½" R.R. Sep. Rig. Fr. Arch 52'-4" Spans Br. Deck Girder 3 Sp. 2@ 120', 144' Alpha Hy. Sep. Alpha I-Beam 3 Sp. 48', 66'-8", 46' Hy. Sep. Alpha I-Beam 4 Sp. 2@55'-10½", 2@ 84'-1½" Alpha Royalty = $2324.96	$320,000 Plans $100 $5,000 Plans $10	5,849,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Barge Canal Terminal, Rochester 1, New York				
Monroe	FASS 52-4	Proj. S289(1), Edgemere Drive Co. Rd.	0.72	Found. Crse. Gravel	$17,000 Plans $10	308,000
Monroe	FAC 52-2	Proj. U1089(2), Rochester City-Inner Loop-Front St.-Main St. West	0.35	Demol. of Bldgs. & Misc. Work	$5,000 Plans $10	97,000
Monroe	O. T. 52-6 R. C. 52-31 S. T. 52-9	New York State Thwy.-The Ontario Section-Subdivisions 8B & 9 (East River Rd. to Rte. 65) West Henrietta-Rochester, S.H. 62 Rush-Henrietta, S. H. 1283 East River Rd.; Middle Rd.; Pinnacle Rd.; Pittsford-Henrietta, Town Line Rd. Return Loop	1.98	9" Cem. Conc. Pavt. 2@ 25' Wide = 1.25 mi. Asp. Conc. Ty. 1A, Opt. = 0.73 mi. R.R. Sep. 65'-9¼" Sp. I-Beam Hy. Sep. 4 Sp. Alpha I-Beam 2@48'-6" & 2@78'-3" Hy. Sep. 4 Sp. Alpha I-Beam 2@38'-3" & 2@60' R.R. Sep. 29'-11¼" Sp. R. C. Rig. Frame Hy. Sep. 5 Sp. Alpha I-Beam 2@42', 2@64', 80' Hy. Sep. 6 Sp. Alpha I-Beam 2@45'-6", 2@64'-10", 2@71'-4" Alpha Royalty = $1349.52	$110,000 Plans $50	1,990,000
		DISTRICT No. 7				
		R. F. HALL, 444 Van Duzee St., Watertown, New York				
Franklin & St. Lawrence	FASSH 52-5	Proj. S367(1), Helena-Hogansburg, Pts. 1 & 2	4.41	Bit. Mac. Ty. 1 Timber Trestle Br. 51' Span	$18,000 Plans $15	315,000

(Continued on the following page)

OFFICIAL PROPOSALS

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 8				
		J. S. Bixby, Pleasant Valley Road, Poughkeepsie, New York				
Orange	PIP 52-1	Palisades Interstate Pkwy., Pts. 1 & 2	1.01	Grading = 0.17 mi. 8" Cem. Conc. Pvmt. 48' Var. Wide = 0.31 mi. Asp. Conc. Ty. 1A, Opt. = 0.53 mi. Hy. Sep. Rig. Fr. Arch 2 Sp. @63.5' ea. Hy. Sep. Rig. Fr. Arch 2 Sp. @42.71' ea. Rig. Fr. Arch Br. 22.33' Sp.	$40,000 Plans $25	685,000
Westchester	W. S. No. 2	Truck Weighing Sta. Turn-out on Port Chester Village, S. H. 5719	0.16	Asp. Conc. Ty. 1A, Opt.	$2,000 Plans $10	34,500
		DISTRICT No. 9				
		F. W. Donovan, 71 Frederick St., Binghamton, New York				
Schoharie	FARC 52-20	Proj. S-674(4) Central Bridge-Sloansville, S. H. 1215	3.14	Asp. Conc. Ty. 1A, Opt.	$35,000 Plans $15	587,000
		DISTRICT No. 10				
		J. J. Darcy, Montauk Highway at East Little Neck Rd., Babylon, L. I., New York				
Nassau	FASS 52-7	Peninsula Boulevard (Merrick Rd.-Ocean Ave.) Proj. 8319(1) Cont. No. 2	1.19	Asp. Conc. Ty. 1A, Opt. = 1.03 mi. Misc. Work = 0.16 mi.	$35,000 Plans $10	630,000
Suffolk		Village of Ocean Beach	0.38	Beach Protection (Hydraulic Fill)	5% of Bid Plans $10	31,350

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder. Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, the Buildings Law, and the Public Authorities Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: April 21, 1952

Paving and Utilities and Relocation of Railroad Siding

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDING NO. 139
CONTRACT PN-150.004

Sealed proposals for the construction of paving and utilities and relocation of railroad siding will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M., Monday, April 21, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 3, 1952

Bids. April 22, 1952

Raw Water Mains

Sealed bids will be received until 9:00 A.M. EST, April 22nd, A.D., 1952, by the City Commission in the City Commission Chambers at Fort Lauderdale, Florida for "Laying 8", 10", 12", 16", 18", 20", 30", and 42" Raw Water Mains".

Bidding blanks may be obtained from the office of the Engineer. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications, and of $25.00 each for additional copies of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 2% of the total of the bid, made payable to City of Fort Lauderdale, Florida shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids.

H. M. LINK
City Manager

Bids: April 17, 1952

Route 35, Section 7A

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of Route 35, Section 7A, Widening and Resurfacing, from Middletown to Keyport, in the Townships of Middletown, Holmdel and Raritan, Monmouth County, Federal Project No. F-4(2). Length 3.947 miles. The principal items of construction are:

Estimated:

47,000 cu. yds. Roadway Excavation—Earth
34,300 sq. yds. Waterbound Macadam Base Course
33,000 sq. yds. Waterbound Macadam Intermediate Course
32,500 sq. yds. Gravel Shoulders
19,600 tons Bituminous Conc. Surface Courses
1,970 lin. ft. Rein. Conc. Culvert Pipe
103 Manholes and Inlets
3,250 lin. ft. Concrete Curbs

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, April 17, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.
NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 48 East Front Street, Red Bank, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: April 29, 1952

East Delaware Tunnel Outlet Works

CONTRACT 417

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, April 29, 1952, for Contract 417, for the construction of the outlet works of the East Delaware tunnel of the Delaware aqueduct, in the Town of Neversink, Sullivan county, New York. The work comprises the construction of about 88 feet of concrete covered and lined steel pipe conduit ten feet six inches in diameter, about 106 feet of concrete covered and lined by-pass pipes 54 inches and 64 inches in diameter, the substructure of a powerhouse, an outlet chamber, a stilling chamber, a discharge channel and appurtenances of all of these structures, including Venturi meters and piping, all as set forth in the specifications.

No bill will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of seventy-five thousand dollars ($75,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders, desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

Permanent Positions Open to

ENGINEERS

. . . after training at full-time pay . . . as

Consultants in Fire Protection Engineering

to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

Write complete qualifications to:
P-2807, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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(Classified Advertising)

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Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.
POSITION WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco offices count as one additional line.
NEW ADVERTISEMENTS: Address N. Y. office, 330 W. 42nd St., N. Y. 36, N. Y. for April 17th issue, closing April 7th.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $17.10 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col. 3 col.—30 inches to a page. E.N.R.

The CITY of NORWICH, CONNECTICUT Is Seeking a DIRECTOR OF PUBLIC WORKS

SALARY RANGE: $6,000-$7,000 per annum with further increases.

The position of Director of Public Works in this city requires that the applicant be a Civil Engineer, licensed to practice in this state. The City of Norwich has a population of 38,000, and has recently adopted the Council-Manager form of government. The position of Director of Public Works requires considerable administrative ability, and municipal or governmental experience is, of course, a decided advantage.

As to the duties, they consist of overall management of Public Works functions, excluding Utilities. In view of the fact that there is not, at present, a full-time Director of Public Works, the position is one that offers opportunities for growth and advancement.

Applications should be mailed to Irving H. Beck, City Manager, City Hall Building, Norwich, Connecticut, and contain a brief resume of age, experience and education.

SALES ENGINEER

Experienced in selling fabricated structural steel for buildings and bridges.

Fine opportunity.

Eastern Pennsylvania Fabricator

SW-3801, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

DISTRICT REPRESENTATIVE

To travel central states; replacement and repair parts for earth moving equipment through dealers; must have car. Salary, expenses and bonus. Must have successful record. Write fully, age, experience.

Box RW-3741, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

REPLIES: Box No.: Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

WANTED
FOREMAN

For operation of a large portable crushing plant for firm in the vicinity of Philadelphia. Must be familiar with equipment maintenance and quarry production methods. State experience, availability, give references and indicate expected salary. Reply to

P-3800, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT

CHIEF ESTIMATOR for an active contracting firm specializing in heavy construction in Metropolitan New York. Must be familiar with excavation, foundations, bridges, highways, etc. Good financial opportunity. State education, experience and particulars to P-3688, Engineering News-Record.

DRAFTSMEN, EXPERIENCED, Structural Steel Checkers and Detailers; Ornamental and Miscellaneous Detailers. State experience and list references in letter to: Southern Engineering Company, Charlotte, North Carolina.

ENGINEER - ESTIMATOR Able to assume charge of quantity survey estimates on carpentry, concrete, forms, excavation, masonry, etc., for large building construction projects. Desire man who can serve as project manager, handle shop drawings, engineering correspondence, some purchasing and subcontract work, and expedite job progress and materials after contracts are secured. An excellent opportunity for the right man. Apply in confidence giving salary desired, age, when available, etc. Fleisher Engineering & Construction Co., 936 Ellicott Square, Buffalo 3, N. Y.

HIGHWAY ENGINEER—To supervise roadway design. Having following qualifications: experience in road, culvert, bridge layout and drainage; preparation of highway plans, final estimates, development design and layout. Furnish full information regarding education, experience, age, references and salary required. Replies confidential. Associated Consulting Engineers, 1606 Kelly Ave., Baltimore 9, Maryland.

QUALIFIED EXPERIENCED building estimator, capable of quantity takeoff and pricing. Location Fort Lauderdale, Florida. Write full particulars to Caldwell-Scott Engineering & Construction Co., Inc. Post Office Box 1221, Fort Lauderdale, Florida.

SEVERAL ENGINEERS in office of consultant on sanitary projects, experienced in this or related fields such as structural or hydraulic. Permanent positions intended. Full information, references and salary requirement requested. Location, Ohio. P-3734, Engineering News-Record.

STRUCTURAL—1 Checker, 1 Detailer. Old, well established, financially secure fabricator. Permanent jobs to experienced men. Air conditioned offices, modern lighting. Please furnish complete qualifications, references in first letter, to Personnel, Decatur Iron & Steel Co., Decatur, Alabama—Population 25,000.

WANTED: BRIDGE Designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-3662, Engineering News-Record.

(Continued on opposite page)

ENGINEERS - INSPECTORS CHEMISTS - GEOLOGISTS

Field and Laboratory

Experienced in Plant and Site Inspection of Concrete and Asphalt. Compaction control of Earth Fill. Foundation Drilling & Soil Tests.

DOMESTIC AND FOREIGN ASSIGNMENTS
Write in Complete Detail to

TOLEDO TESTING LABORATORY
TOLEDO, OHIO

ERECTION MANAGER

Experienced in handling erection structural steel for buildings and bridges. Opportunities unlimited.

Eastern Pennsylvania Fabricator

P-3799, Engineering News-Record
330 West 42nd St., New York 36, N. Y.

WANTED
CITY ADMINISTRATOR

City of San Carlos, Calif.

(Pop. approx. 16,000) invites applications

Salary open depending upon the experience and qualifications of man selected. City Administrator experience preferred. Contact City Clerk, City Hall, San Carlos, California, for application and qualifications. Closing date for receipt of applications closes May 31st.

COST ENGINEER

Unusual opportunity for Cost Engineer on major plant project in California. Requires cost and construction experience, but principal qualifications are intelligence, interest and ambition. Functions include unit cost analysis, special cost reports and cost forecasts. A responsible position and one offering opportunity for advancement in an expanding, progressive organization.

Write giving complete qualifications, references and salary requirements. Your reply will be held confidential.

BECHTEL CORPORATION
220 Bush Street
San Francisco, California

WANTED
MASTER MECHANIC

Completely familiar with repair and operation of all types of dozers, graders, tournapulls, carryalls, truck and crawler cranes, pumps, compressors, and other contractors equipment to manage large shop and field maintenance work for firm in the vicinity of Philadelphia. State experience, availability, give references, and indicate expected salary. Reply to

P-3798, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of Instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*

WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

(Continued from opposite page)

SELLING OPPORTUNITIES OFFERED

CIVIL ENGINEER with sales experience has good opportunity in Pittsburgh territory with large manufacturer in construction field. Must have C.E. degree. Should have experience contacting engineers and contractors. State qualifications in first letter. SW-3623, Engineering News-Record.

SALES REPRESENTATIVE: Metropolitan New York Construction equipment, old established firm. Preferably middle thirties and married. Salary and commission. Car furnished. Send full details and recent photograph. RW-3758, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

ACCOUNTING EXECUTIVE, seeks key accounting position with general contractor, 22 years experience in all phases of construction accounting and office management in Main Office and Field. Prefer permanent location. Good clean record. PW-3644, Engineering News-Record.

CHIEF ENGINEER—Structural and Architectural, 25 years experience on industrial buildings, power plants, etc. PW-3591, Engineering News-Record.

CIVIL ENGINEER, age 26, married, registered, 4 yrs. structural design, 2 yrs. heavy construction, desires aggressive position with consulting engineer. PW-3725, Engineering News-Record.

CIVIL ENGINEER, Canadian, 27, P.Eng. Ont. B.A.Sc. seeks foreign employment in construction. Experienced in surveying, heavy construction, also design, detailing, estimating, erection of steel structures, plant layout, reinforced concrete and timber design. Married. Available Sept. 52. PW-3561, Engineering News-Record.

CIVIL ENGINEER, Graduate, registered, age 49, 22 yrs. varied experience; highway design and location; railroad layout and construction; post engr., airfields, construction engineer for contractors; presently employed in responsible position; executive ability. Desires change in near future. PW-3763, Engineering News-Record.

CIVIL ENGINEER: Graduate with Masters Degree. Member A.S.C.E., Member N.S.P.E. Registered Professional Engineer: Ohio, New York, Maryland, Michigan. Twenty years experience in preliminary surveys, soil surveys, foundation investigations, location, design, construction and maintenance of highways, bridges, airports, dams, industrial and commercial buildings. Six years foreign service in England, Africa, Italy, Greece, Ceylon and Turkey. Available May 1st. Foreign or Domestic. PW-3659, Engineering News-Record.

CIVIL ENGINEER, M.ASCE, 56, degrees, state licenses, 30 years experience; design, construction, and administration; bridges, parkways, thruways, airports, harbor works, railroads, underpinning and foundations. PW-3736, Engineering News-Record.

CONSTRUCTION ENGINEER. Graduate Civil, 28, 4 years office and field experience on Heavy Industrial Buildings, Foundations and Drainage Structures, Highways, and large earth moving projects. Desires foreign location where family can accompany. PW-3679, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 42 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

POSITIONS WANTED

LICENSED CONTRACTOR. Specializing in Commercial building for past four years. graduate C.E. Age 33, married. Registered professional engineer. Qualified estimator. Business management. Field supervisor, costs, purchasing, contracts. World War II pilot. Desires position with large organization, domestic or foreign, with opportunity for advancement. Available immediately. Correspondence invited. PW-3663, Engineering News-Record.

CONSTRUCTION IN Europe. Available for top executive-supervisory-technical position only. 30 years experience as Civil Engineer including 3 years in top civilian supervisory capacities in U. S. Army Engineers Command in Germany. Most recent experience 2½ years in responsible position in U. S. Air Force construction program in Europe. Speak French and German. PW-3702, Engineering News-Record.

EXECUTIVE CONSTRUCTION Engineer, long experience, estimates and supervision heavy construction including foundations, dams, docks, tunnels, especially difficult subaqueous structures. PW-3497, Engineering News-Record.

GRADUATE CIVIL Engineer—8 years experience in civil, structural, and mechanical design and drafting. Position with firm designing water supply and sewage disposal plants preferred. PW-3789, Engineering News-Record.

OPEN FOR Connection. Experienced man, honest, sober, perfect health, energetic and aggressive. Engineer with thirty years experience in all types of construction. Familiar with present day operating office and field, estimating, bidding, buying, CMP regulations and field supervision. Can successfully operate under existing conditions. Capable of assuming full charge or working with present management for expansion of the establishment of branch office; interested in a well financed business with a good reputation; salary based on yearly earnings. Prefer Washington, D. C. area. Member A.S.C.E. PW-3803, Engineering News-Record.

SERVICE MANAGER—Graduate M.E. 5½ yrs. service and construction. High mechanical and operator ability on heavy earthmoving equipment. Very energetic, possesses diplomatic tact. Desires position with responsibility as asst. service and parts mgr. for hvy equip. distr. Prefers midwest location. Available 1st July. PW-3771, Engineering News-Record.

WELDING SUPERVISOR—age 40, background, piping, piers, bridges, docks, subways, and tank farms desires Foreign work. PW-3781, Engineering News-Record.

PART TIME WORK WANTED

PART TIME DRAFTING wanted. Architectural training and experience New York region—Manhattan preferred. PTWW-3780, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES ENGINEER—thirty years old, graduated with mechanical engineering degree, licensed structural engineer with five years' experience in selling building materials, interested in technical sales field. SA-3724, Engineering News-Record.

CONTRACTOR'S BUSINESS FOR SALE

Owner retiring, Central New York State

Land, large garage & separate modern office building. Equipment includes all types of equipment and tools for water, sewer and excavation work. Could include our personnel if desired.

BO-3574, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

BUILDING CONSTRUCTION COST DATA
1952 (10th) Edition

A 105-page booklet of tabulated construction costs revised as of January 1952. 1600 average spot prices, alphabetically arranged and broken down for labor and material, plus 112 explanatory paragraphs. Concise, Comprehensive, Up-to-date. Handy $2.75 Postpaid.

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U.S.A. Air Corps
LIGHT BROWN
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ENAMEL
REGULAR $30. VALUE
5 FULL GALLONS FOR ONLY $3.95
SHIPPING WEIGHT 68 LBS. F.O.B. PHILA.

A fine bodied, lusterless, enamel made to U.S. Air Corps Spec. 2680—Class 20. For all wood and metal surfaces, protects against weather, rust and corrosion. For brush or spraying inside or outside, can be blended with other colors. Ideal for coal equipment, scrapers, cranes, trucks, tool sheds and cutbuildings. Makes fine prime coat.

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The Oldest Equip. House in Phila.

FOR SALE AT PUBLIC AUCTION

Complete contents of a deceased Mechanical and Research Engineers office. Including office equipment, drafting equipment, library, models, dies, precision tools, balance scales, lathes, multiple drills, drill presses, electric motors, fans, file cabinets, plan files, work benches, cabinets, large assortment of hand and motor driven tools. All items will be sold separately. Inspection on April 11th and 12th. Sale on April 15th, 1952 at 10:30 A.M. at Kay Moving Service Inc. Warehouse, 465 West 150 St., New York 31, N. Y. Thomas Burchill, Auctioneer. Tel. Audubon 6-3240.

WANTED
Used Heavy Duty Rapid Pavement Breaker

Please give full detail first letter as to Truck, Compressor, and Breaking End.

W-3648, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

WANTED

20—New row-boats (lake model) 14' or 16' complete with oars, etc.

Also: 15 Kickers 5, 7½ and 10 H.P.

Box 314, Chester, N. Y.

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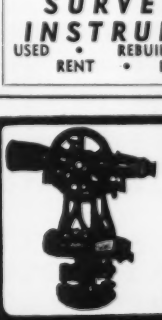

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38—5 Cu. Yd. Side Dump, 36" Gauge

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14″	4	1/16″	1/32″	28 Oz.
16″	4	1/8″	1/32″	28 Oz.
18″	4	1/8″	1/32″	28 Oz.
20″	4	1/8″	1/32″	28 Oz.
20″	5	1/8″	1/32″	28 Oz.
24″	4	1/8″	1/32″	28 Oz.
24″	5	1/8″	1/32″	28 Oz.
26″	5	1/8″	1/32″	28 Oz.
30″	4	1/8″	1/16″	32 Oz.
30″	5	1/8″	1/16″	32 Oz.
30″	6	1/8″	1/16″	32 Oz.
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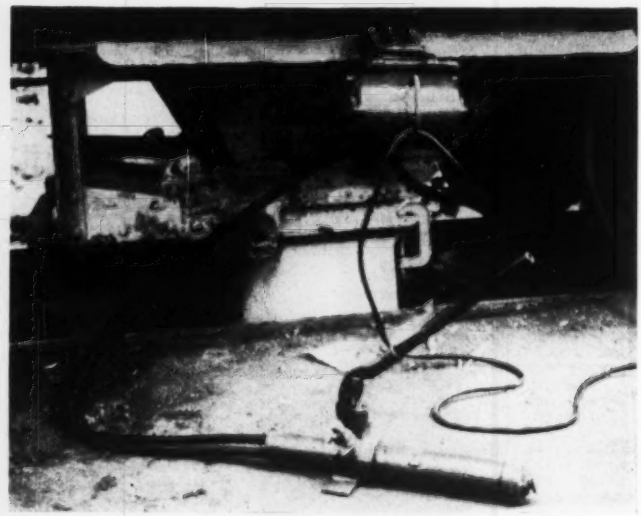
Engineering design and construction tests run from MOBILE LABORATORY UNITS at construction site.
Field load bearing tests.

193 West Shore Ave., Bogota, N. J.
Bogota-Hubbard 7-4408



Vibrator unloads railroad hopper cars

The completely enclosed, self-contained vibrator unit shown here consists of a clamping device, a hydraulic push-pull jack, a bracket to hold the vibrator, and a pair of jaws which are opened and closed by action of the jack. These jaws will clamp with a pressure of 10 tons to any flange, channel or angle iron or any type of steel beam to effectively and inexpensively unload railroad hopper cars. The vibrator, which delivers 3600 impulses per minute, is available for operation on 60-cycle, 3-phase current in a choice of voltages ranging from 110 to 550 v. They can also be supplied for operation on fewer than 60 cycles or on a 2-phase current at a slight additional cost. VIBRO-PLUS PRODUCTS, INC., 54-11 QUEENS BOULEVARD, WOODSIDE, L. I., N. Y.

New fastener developed for Ramset line

Previous to the development of Tru-Set fasteners, the drive pin and threaded stud type fasteners were held in the breech of Ramset tools by a thin flange, which was sheared off when gas pressure developed to a maximum. Now these fasteners with no flange at all are actually inserted in the breech plug right under the powder load. An elasticized tip at the point end of the Tru-Set fastener completes the seal and also prevents the fastener from being tilted while in the barrel of the tool. They are said to provide for greater penetration from the same amount of power, automatic cleaning of tool barrels, higher quality and more effective fastenings, and greater power control.

The new models also eliminate one step in the operating cycle which establishes a practical standard of approximately 20 sec for the complete operating cycle of Ramset tools. RAMSET FASTENERS, INC., 12117 BEREA RD., CLEVELAND, OHIO.

Machine combines tractor, fork lift

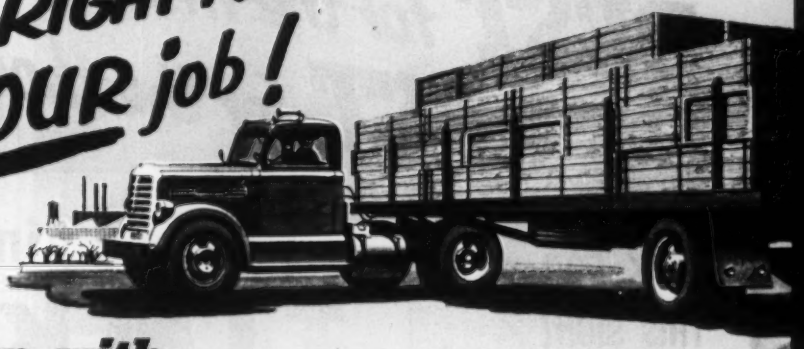
The heavy-duty machine that you see below moving two snow-covered sections of concrete pipe from a contractor's storage yard is called a Tracto-Lift. Combining the lifting power of a fork truck with the travel of a tractor, it provides a speedy and efficient method of storing concrete products, construction and building material. It can move heavy materials over soft or cultivated fields; for instance, in citrus groves or on construction sites where ground conditions will very frequently not permit the use of standard fork trucks.

Large super traction tires on front are switched from original installation to give maximum traction in the opposite direction. Other modifications are the reversing of the transmission, tractor seat, and steering mechanism, improvement of standard steering, and the addition of rear counterweights for maximum stability while handling heavy loads. Minimum underside clearance is 8 in. on the small or medium size machine and 10 in. on the larger. The Tracto-Lift is available in four sizes with lifting capacities of 3, 4, 5, and 6,000 lb. Fork lengths vary from 30 to 60 in. with lifting heights to 12 ft. 6 in. Travel speeds match those of industrial tractors.

A complete line of attachments is available, including concrete block

(Continued on page 135)

Get the RIGHT AXLE for YOUR job!



Go Modern with

TIMKEN Detroit AXLES

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY

DETROIT 32, MICHIGAN

The Accepted D A Co Standard

TRADE MARK REGISTERED

Here's One More Reason Why!

a complete "family" of advanced-related design front and rear axles.

Be sure you get exactly the *right* axle for *every* trucking job! Specify Timken-Detroit Front and Rear Axles on your new trucks and get the axle capacity and final drive that is exactly suited to the job to be done.

In rear axles, Timken-Detroit's "3 for 1" line includes several basic axle capacities to cover the entire field of medium and heavy-duty trucking requirements. These rugged axles have the same features of construction, the same interchangeability of parts, and the same outstanding performance characteristics throughout the entire range of sizes. They differ only in load-carrying, torque-transmitting and braking capacity. This complete line, with optional types of final drives and optional gear ratios available in each capacity, provides the most complete flexibility ever achieved in truck axle manufacture and use. In addition, a complete series of companion front axles are built by Timken-Detroit incorporating new advanced features for greater stability and safety.

The next time you buy trucks *go modern* with Timken-Detroit Front and Rear Axles and Brakes!

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

PLANTS AT: Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y. • Ashtabula, Kenton and Newark, Ohio • New Castle, Pa.

BEST for the first haul!
BEST for the thousandth!

LOOK FOR THIS SIGN!

Genuine TIMKEN Detroit AXLE PARTS

The Accepted D A Co Standard

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Every Timken-Detroit Axle on your trucks was designed and engineered as a *unit!* That's why it's so important to replace worn parts with new ones that are specifically built to keep your axles in peak operating condition. Install only *genuine* Timken-Detroit Axle replacement parts.

These dependable parts are identical in every respect with the original parts in your Timken-Detroit Axles. They are made in the same Timken-Detroit plants to the same exacting specifications. They take less time to install, require no extra adjustments. What's more, many of these parts are packaged in protective kits containing *all* the essential related parts to do a factory-type replacement job.

Whenever you need parts for your Timken-Detroit-equipped trucks, look for the sign that reads "Genuine Timken-Detroit Axle Parts." You'll save money, time and trouble!

MAIL THIS COUPON FOR FREE ILLUSTRATED LITERATURE

The Timken-Detroit Axle Company
100 Clark Street, Detroit 32, Michigan

Gentlemen: Please send me free literature on Timken-Detroit Axle Parts.

NAME_____

ADDRESS_____

CITY_____ STATE_____

I operate _____ (Number of trucks)

forks, brick forks, carton and box gripping attachments, scoop attachments, hopper dumping attachments and crane boom. TRACTO-LIFT CO., 2011 BALTIMORE, KANSAS CITY 8, MO.

Cabinet stores blueprints

If all the money spent by contractors in erecting home-made blueprint racks were put into one pile it would amount to a staggering sum. What's worse there's still no protection for the prints thus stored. This Draw-In-Dex cabinet can hold as many as 1,250 prints singly or in groups. A neat aluminum hanger will hold from 1 to 50 prints and any one of them can be removed or replaced without disturbing neighboring prints. Made of steel with a security lock, the cabinets measure 20 x 30 x 48 in. and come in gray, green or brown. Three index cards in the cover provide quick location of any sheet or group. EMPIRE DEVELOPMENT CORP., DEPT. R, 15 PARK ROW, NEW YORK 38, NEW YORK.

Industrial sander offered

Weighing only 7½ lb., yet with ample power and capacity for continuous production use, a new 7-in. standard industrial sander is available, designed for fast sanding, wire brushing, grinding and polishing on metal, wood, tile, plastic, glass, concrete and other surfaces. In addition to use with standard wheels, disks and brushes, it offers exceptional performance with the new laminated phenolic grinding wheels and disks.

The new No. 870 features precision machined, heat-treated alloy steel gears. No-load speed is 4500. The

(Continued on page 137)

TIMBER IS DOING THE JOB
for both
DEFENSE AND CIVILIAN NEEDS

Pictured above are 166′ clear span timber trusses for an aircraft building that are typical of the rush jobs being built these days with engineered timber.

There's plenty of timber, and timber fabricators in all sections of the country can help you now.

Stores, markets, warehouses, garages, hangars and many other types of light and heavy structures are being designed in timber.

You have a choice of three popular types of timber construction—(1) Teco timber connector system, (2) Glued laminated timber, and (3) Lamella construction.

Specify timber—it's ready as usual for early delivery.

TIMBER ENGINEERING COMPANY
1319 - 18th St., N.W., Washington 6, D. C.

Please send me FREE of charge "Design Manual for Teco Timber Connector Construction," and "National Design Specification for Stress-Grade Lumber and its Fastenings" recommended by National Lumber Manufacturers Association.

We plan to build a.....

Name.....

Company.....

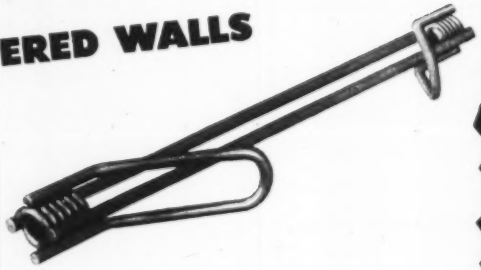
Street..... City..... State.....

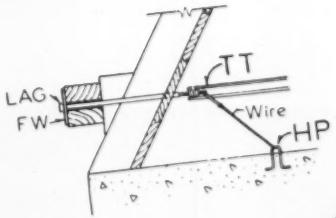
ENR

ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

THIS TIE DOWN TYSCRU PREVENTS UPLIFT ON BATTERED WALLS

The Richmond Tie Down Tyscru offsets any tendency towards uplift of the form where construction is off the perpendicular. It is a standard 2-strut Tyscru with a 45° Tie Down Loop at one or both ends. The loop is wired to a Hairpin or Ty-Loop imbedded in the footing. Particularly useful where extreme batter tends to cause an uplift in the form.





PIPE THE BABE— WILL 'YA— WHAT A SHAPE!
OH BOY! IT WOULD SURE BE A SHAME TO TIE THAT DOWN.
SCREW
INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND!
Richmond
SCREW ANCHOR CO., INC.
816-838 LIBERTY AVENUE · BROOKLYN 8, N.Y.

Get your "SCREWY" or "TY" button—write Charlie Snyder at Richmond, 816 Liberty Ave., Brooklyn 8, N. Y.

RICHMOND KNOW-HOW—DEPENDABILITY—SERVICE—ESTIMATES & JOB PLANNING

New Products . . .

Universal type motor is designed for d.c. or a.c. 25-60 cycles. Its rating is 5.5 amp. at full load on 110-volt current. Accessories include standard cup grinding wheels, wire cup brushes for removing rust, scale, and paint, and the new laminated phenolic wheels and disks. Millers Falls Company, Greenfield, Mass.

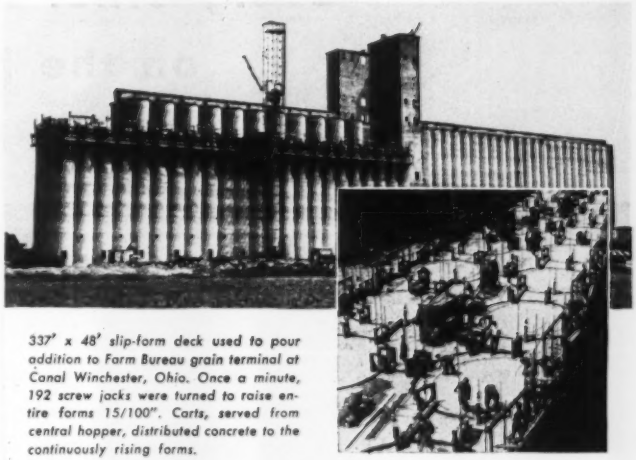
Tools drill extra long holes

Here is a complete set of tools for use with standard percussion type rock drills for drilling long holes varying in depth from 20 to 150 ft. Components include: Tru-Seal shank, adapters, couplings, extension rods, and Rok-Bit tungsten carbide bits. Recommendations include drilling grout holes, test holes, sub-level bench stopping holes or blast holes of standard diameters (1⅞ and 3 in.). Such holes can be drilled in any type of rock or ore and in any direction, the manufacturer points out, by following a recommended procedure. He further claims that the couplings and adapters are designed to be self-cooling and self-cleaning. The tool's design keeps all holes in alignment and greatly minimizes vibration and maximum depth. Rock Bit Sales & Service Company, 2514 East Cumberland Street, Philadelphia 25, Pa.

Dry chemical extinguisher recharged with air

The newest portable fire extinguisher is a pressure-operated, dry chemical type which can be recharged easily in the field. Design of the portable permits it to be serviced following discharge by simply pouring 5 lb of dry chemical into the powder chamber and, with the aid of a gas station or factory air line, charging the unit with 150 lb of compressed air.

(Continued on page 139)



337′ x 48′ slip-form deck used to pour addition to Farm Bureau grain terminal at Canal Winchester, Ohio. Once a minute, 192 screw jacks were turned to raise entire forms 15/100″. Carts, served from central hopper, distributed concrete to the continuously rising forms.

How to pour a 1,200,000 bushel basket — in one piece

By a continuous pour of 6,000 cu. yds. of ready-mixed concrete, into slip-forms raised on jackrods at the rate of .15″ every minute, this elevator addition was completed in 168½ hours. The 24 bins, each 20′ in diameter and 127′ high, and interstitial walls, covering a 337′ x 48′ area, form one monolithic structure without joint or seam.

Because concrete design envisions a homogeneous material, of numerous elements completely mixed, the ready-mixed concrete industry certifies by Rating Plate those truck mixers and agitators which have the proper design, capacity, drum speed, mixing action and water control necessary to produce a homogeneous concrete of uniform strength.

Look for this Badge of Dependability on Truck Mixers: You have a right to insist on this Rating Plate on any truck mixer that serves your jobs. It is available to all who comply with the quality standards established by the National Ready Mixed Concrete Association and the Truck Mixer Manufacturers Bureau.

These member manufacturers comply with Bureau standards:

BLAW-KNOX DIVISION, Pittsburgh, Pa.
CHAIN BELT COMPANY, Milwaukee, Wis.
CONCRETE TRANSPORT MIXER CO., St. Louis, Mo.
THE JAEGER MACHINE COMPANY, Columbus, Ohio
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP., Dunellen, N.J.

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

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B. H. Mueller Co., 6625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

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Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

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and Shops
PHOENIXVILLE, PA.

Subsidiary—Bethlehem Steel Corporation

every other MARION 151-M on the IRON RANGE is a REPEAT ORDER

A NOTABLE RECORD OF ACCEPTANCE

Many of the biggest companies on the Iron Range are owners of MARION 151-M shovels.

MORE THAN HALF of these MARION owners have two or more 151-M machines.

In these days of urgent demand for increased ore production —days of high operating costs—days in which it is perhaps more important than ever to make wise selections of equipment, MARION is humbly proud of this unusual record of acceptance.

Let your nearest MARION representative show you the facts and figures about the jobs the MARION 151-M is doing on the range.

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from 3/4 cu. yd. to 45 cu. yds.

New Products . . .

The rig features trigger-type finger control, and a gauge is built into the handle showing exact pressure at all times. Should the gauge fall below 150, additional air can be added at any time to bring it up to the unit's designed operating pressure. The portable weighs only 10 lb fully loaded, stands 15 in. high and is 4½ in. in diameter. WALTER KIDDE & COMPANY, INC., 40 EAST 34TH STREET, NEW YORK 16, N. Y.

Heil 2C500 Heiliner now available commercially

For the past year the 2C500 Heiliners like the one pictured here have been built exclusively for the Corps of Engineers, but are now available commercially according to the company's Road Machinery Division. Equipped with a 13 cu yd scraper, it features exclusive Hydro-steer, unobstructed visibility and speeds, even when loaded, up to 25 mph. Heavy-duty two-shoe air brakes are synchronized on both the tractor wheels and the trailing unit wheels. A 165-hp Cummins diesel powers the 500 Heiliner, which is a little sister to the 2C800 with its 200-hp Cummins diesel, 18-yd scraper and 20-yd dump wagon. THE HEIL COMPANY, MILWAUKEE 1, WISCONSIN.

Portable impact wrench is pneumatic and reversible

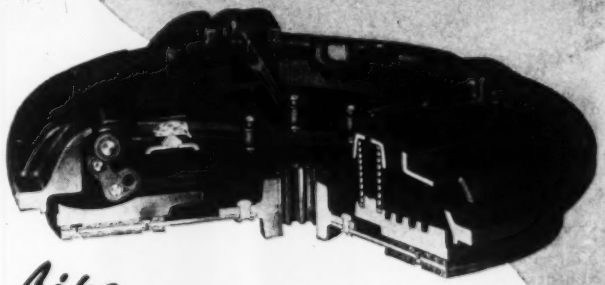
A new Thor ⅜ in. portable impact wrench is now available, powered by air and reversible, with the same basic impacting mechanism as on the company's electric powered tools. Key feature is an exclusive rolling ball type cam which increases efficiency and steady functioning of the impacting mechanism. The new wrench is available with two types of spindles—a size 24 with ¼ in. square drive, and a size 24S with 7/16 in. hex quick-change chuck, integral with the spindle.

Equipped with convenient side handle and trigger type throttle, the new wrench weighs only 5¾ lb and measures 8 11/16 in. in length. A reversing valve on the back of the

(Continued on next page)

Constant Torque Capacity

for entire life of friction material



Lipe CONSTANT-CAPACITY CLUTCH OF THE NON-ADJUSTABLE TYPE

The Lipe Constant-Capacity Clutch uses a unique application of the toggle-lever principle: Compensates for fading pressure of expanding springs . . . maintains maximum torque capacity throughout life of frictional material.

The constantly increasing ratio of the toggle levers — which never go over center — compensate for the loss of pressure due to spring expansion. So long as there is enough frictional material to hold, the Lipe Constant-Capacity Clutch of the non-adjustable type does not lose torque capacity.

Every Feature of This Clutch Gives You Extra Service

Engages gently because the toggles absorb the initial energy of the springs . . . and because the speed of the toggle action fades as the pressure plate approaches the friction element. It has a high thermal efficiency because the massive plate, ribbed for rapid radiation, is cooled by positively generated air currents.

The pressure plate and friction element are always parallel. Non-adjustable, serviced without special tools.

Write for detailed specifications and performance data.

Lipe-ROLLWAY CORPORATION
Manufacturers of Automotive Clutches and Machine Tools
Syracuse 1, N. Y.

Ansco Color Film Building No. 102—Binghamton, N. Y. Architect: Smith, Hinchman and Grylls, Inc. Contractor: Vincent J. Smith, Inc.

"EVEN AT 4 TIMES THE PRICE" WITH MASONITE CONCRETE FORM PRESDWOOD

You can save money, too! When you need super-smooth, flat surfaces, use Masonite Concrete Form Presdwood®. These all-wood hardboard panels have no knots or grain, leave no pattern. Eliminate virtually all hand-rubbing. Leave concrete ready to paint.

Here's what the Contractor Says:

VINCENT J. SMITH, INC.

August 15, 1950

Masonite Corporation
111 W. Washington St.
Chicago 2, Illinois

Gentlemen:

We used approximately 130,000 sq. ft. of Masonite Concrete Form Presdwood in the construction of the Ansco Color Film Building No. 102 at Binghamton, New York. It was used for form liners of beams, slabs and columns.

This material provided a smooth finish that greatly reduced the amount of hand rubbing needed. In fact, concrete form Presdwood was such a money-saver that even if we had to pay 4 times the purchase price, it would still be economical to use.

Very truly yours,
VINCENT J. SMITH, INC.
BY George P. Lane, Gen. Sup.

Other advantages? Just consider these—

- Insures complete, uniform hydration.
- Saves form lumber costs.
- Easily worked with ordinary carpentry tools.
- Can be curved for arches, columns, etc.
- Can be used again and again.
- Won't split, splinter, or crack.
- Comes in large, accurately cut panels, 4' x 12'.
- Reduces joints to a minimum.

Write for new illustrated brochure. Use the handy coupon below.

MASONITE® CORPORATION
Dept. ENR-43, Box 777, Chicago 90, Ill.
"Masonite" signifies that Masonite Corporation is the source of the product

Please send me your new brochure on Masonite Concrete Form Presdwood.

Name.....

Firm.....

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City and Zone.....*State*.....

Better Hardboards for Better Building

New Products . . .

tool is readily available for tightening or loosening operations. INDEPENDENT PNEUMATIC TOOL CO., 175 NORTH STATE STREET, AURORA, ILLINOIS.

Carburetors cleaned right on the engine

GUMOUT is a new product used to clean carburetors on-the-engine with a forced-flow process in less than 20 min. Using a special applicator called the Gumouter, GUMOUT enters the carburetor through the gasoline intake. The solution flows through all gasoline and air jets, passages, screens and vents of the carburetor; dissolving and removing, by chemical cleaning action, gum, sludge, muck, moisture and lacquer deposits from all internal carburetor parts.

Diesel GUMOUT is a special product made for use in diesel engines and oil heating equipment. One pint should be added to the fuel tank for every 50 gal of fuel. For cleaning oil heating equipment one pint is sufficient when added to every 100 gal of fuel oil. PENNSYLVANIA REFINING COMPANY, 2686 LISBON ROAD, CLEVELAND 4, OHIO.

New Product Briefs . . .

A new **non-mortising type hinge** is being distributed exclusively by the **No-Mortise Hinge Corporation, Bound Brook, N. J.** Its distinguishing feature is that no recess is needed to accommodate it; the hinge screwing to the door and frame, eliminating all mortising and chiseling. The outer and larger leaf of the hinge is screwed to the frame, while the smaller, inner leaf is screwed to the door. When the door is closed the small leaf of the hinge fits into an area cut out of the larger one. Available in standard sizes of 2, 3, and 4 in., in standard finishes with loose or tight pin.

A new **drafting machine** called the baby VEMCO Model 33 is a small edition of the standard VEMCO drafting machine made by **V. & E. Manufacturing Co., 758 S. Fair Oaks Ave., Pasadena 20, Calif.** With a 16-in. arm length, it is equipped with a vernier reading to 10 min. It has aluminum brackets and steel band covers, a full circle base line setting and a protractor brace.

No indexing mechanism is provided and all angles, including the 15-deg positions, are set by the protractor brake in the same manner as the angles between the 15-deg positions of the standard drafting machine.

(Continued on page 143)

Tournarocker spreads load while moving, eliminates need for further spreading with dozer. Roadbed is 9 meters (30 ft.) wide; asphalt surface will be 6 meters (20 ft.) wide along entire 400-km. (250-mi.) length of highway.

Pilgrimage road through the Arabian desert

will cut travel time by 59 days

Today, when a Mohammedan pilgrim wishes to travel from the Port of Djeddah to Medina, Arabian birthplace of Allah, he must mount a camel or burro and be carried inland across desert trails in the manner of his ancestors. The 400-km. (250-mile) journey takes him *60 days*, each way. After 1954, though, he will be able to board a motor bus, speed across a modern, hard-surfaced, all-weather highway, and in *10 hours* be in Medina, or back at Djeddah.

Work in sand and 150° heat

Construction of the highway is progressing rapidly now, even though the contractor, T. W. Ward Co., Ltd. of Sheffield, England, faces incredible difficulties. The Ward work crews must move material which is mostly shifting, abrasive blow sand, mixed with patches of coral, volcanic rock, and gravel. Dust is everywhere. Temperatures often reach 150°F. (49°C.). To complicate matters still further, there are holy places along the way forbidden to Christian supervisors. However, Arabian operators, trained on the job, became sufficiently skilled in a few weeks' time to work their 3 rear-dump Tournarockers and 2 Tournadozers (bulldozers on rubber tires) efficiently, anywhere, with or without supervision.

3 Tournarockers move 30 tons hourly

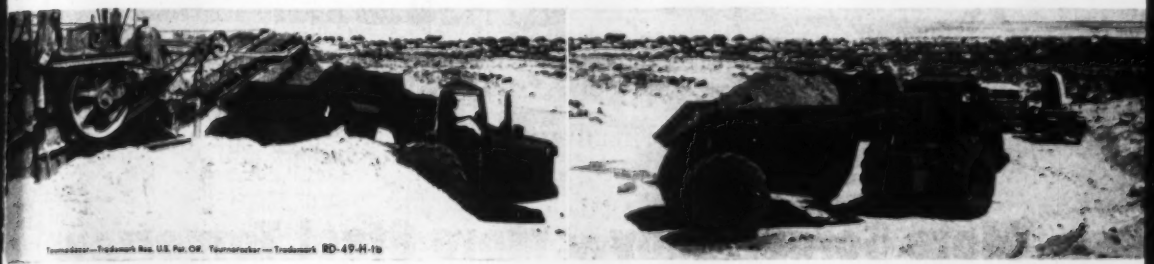
Tournarockers are used mainly to haul pulverized basalt and coral from a small rock crusher (capacity, about 70 tons hourly). Each Tournarocker is loaded with 18 tons of material in 15 to 20 minutes. When these photos were taken, units were hauling 12 kilometers (7.4 miles) over very rough, rocky trails and unloading 270 tons into the roadbed every 9-hour shift.

2 Tournadozers feed rock crusher

Tournadozers handle all rough grading; in addition, doze coral and 20 to 100-kg. (45 to 220-lb.) basalt boulders to the crusher. "These rubber-tired LeTourneau dozers are particularly useful for this work," writes G. S. Wood, director for the Ward Company. "They roll over the uneven surface without undue trouble, whereas tracked units cannot ride over this same surface without tracks being severely damaged or broken by localization of weight on single track pads."

Like T. W. Ward Co., scores of progressive contractors, mines, and governmental departments are taking advantage of the dependability and speed of these rubber-tired machines to move earth fast under difficult conditions. Should you be interested in the economies of modern machines for faster, lower-cost completion of your projects, see your LeTourneau Distributor. He will gladly help you analyze your equipment needs, help you make cost estimates, or put you in touch with contractors who can put these cost-cutting earthmovers to work for you.

R. G. LeTOURNEAU, INC.
Peoria, Ill.

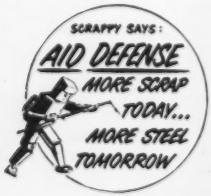


Tournadozer—Trademark Reg. U.S. Pat. Off. Tournarocker—Trademark RD-49-H-1b

Loaded by crusher, Tournarocker heaps 8 m³ (10½ cu. yds.) of pulverized rock in 15 to 20 minutes. Operator can get off the Tournarocker during loading process, since unit does not have to be moved back and forth to get full load. Square body fills evenly from single center loading spot.

Tournarocker starts 12-km. (7.4-mi.) cycle. Soft footing and rough roads hold travel speeds well below 56 km./h. (35 m.p.h.) maximum, but each unit still delivers 3 loads every 4 hours. Maintenance has been very low; units have no frames, springs, dual tires, or hydraulic hoist systems to cause trouble.

Grandpa Never Threw a Thing Away



It's only human to want to hold on to things after they've outlived their usefulness. That's why today millions of tons of worn-out and obsolete equipment and machinery are lying forgotten in the country's plants and factories and on farms.

The steel industry needs these millions of tons of dormant scrap, needs it in the worst way. With this vital dormant scrap the entire steel supply picture would brighten up, with more steel for everybody. But without it, the steel industry cannot hope to keep up production at present levels.

Call in a scrap dealer now, today. He will buy your dormant scrap and start it moving toward the steel mills.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

More Scrap Today... More Steel Tomorrow

PUBLICATIONS

Hydraulic Truck Hoists—Four types of hydraulic hoists and two types of truck bodies are described in a six-page folder by Perfection. A large clear-cut photo of the lift mechanism shows the featured Iso-Draulic Roll-A-Lift. A hydraulic cylinder pivoted on huge trunnion bearings actuates two graduated track arms which pivot on a heavy cross shaft. Pressure rollers are mounted on both longitudinals under the body. These engage the arms and travel along their upper surfaces as the body rises, assuring greatest mechanical advantage at the start where the lift is heaviest; then maintaining this MA so that cylinder oil pressure remains constant right up to the dumping point, when it decreases sharply. THE PERFECTION STEEL BODY CO., GALION, OHIO.

Alidades—To aid engineers in the field in the use and adjustment of alidades, a new, 28-page pocket-size booklet has been published by W. & L. E. Gurley. Known as booklet C, the first half has information for use of the alidade in mapmaking and exploration as well as detailed instructions on stadia surveying and use of the Beaman Stadia Arc. The second half deals with instrument adjustments, parallax, striding level, collimation, control level, compass needle, finder sights, etc. W. & L. E. GURLEY CO., TROY, NEW YORK.

Arc Welding Accessories—Three new two-color bulletins by G.E. are available which describe protective clothing (GEC-867), helmets and glass (GEC-865) and brushes, carriers, chipping hammers, weld gages, paint and weld-spatter compounds, etc. (GEC-866). In addition to these illustrations and descriptions the bulletins list specs, type and catalog numbers for each item. GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK.

Steel Paving Forms—The new Blaw-Knox paving form is a self-aligning, heavy-duty model and has been designed specifically for airport paving. Now the company's Bulletin 2370 describes it fully. It explains the need for paving forms in excess of 12 in to handle thicker slabs necessitated by concentrated wheel loads of heavy bombers and air transports. It contains detailed construction features including the lock-joint connecting slide plates. BLAW-KNOX DIVISION, BLAW-KNOX COMPANY, FARMERS BANK BUILDING, PITTSBURGH 22, PA.

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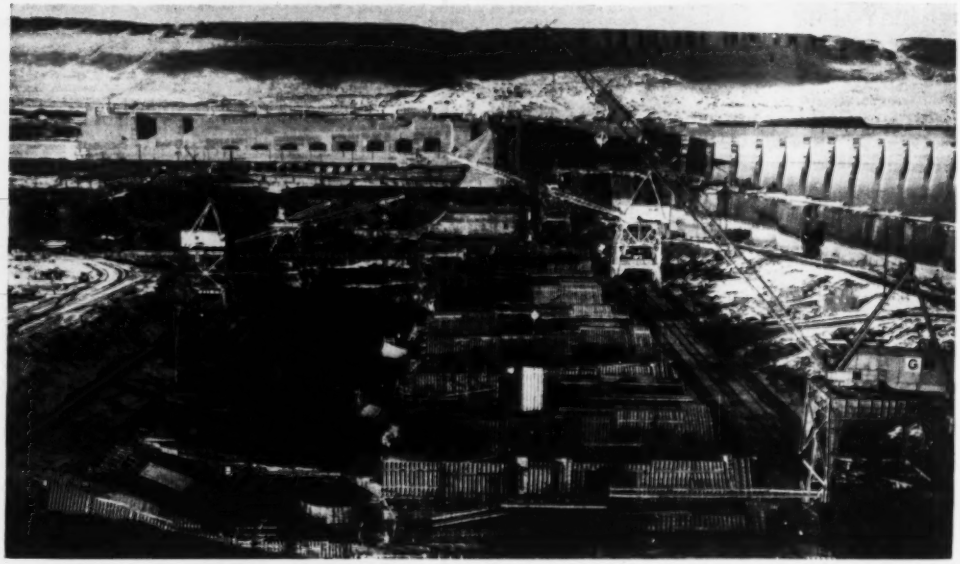


McNARY POWERHOUSE TAKES SHAPE as work on this $300 million project on the main stem of the Columbia reaches a peak. First of the 14 generators is due on the line late in 1953 with additional 70,000 kw units being available at about three months intervals. Peak of construction effort will be reached early this spring with some 3,600 men at work.

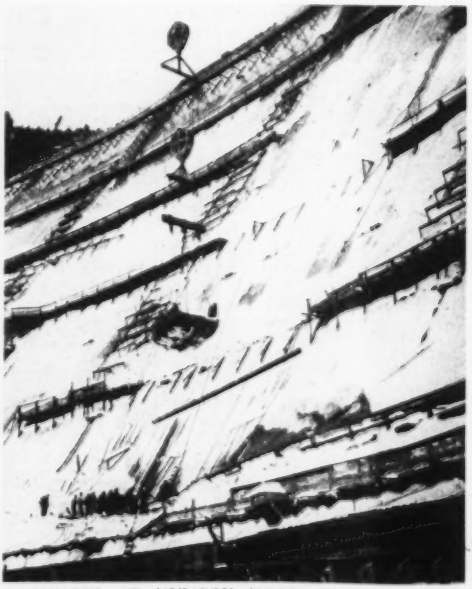
Columbia River basin leads U. S. dam building work

There is more dam building activity currently under way in the Pacific Northwest states than in any comparable area in the U. S. And there are good reasons for this concentration of activity, too. Most of it is hydroelectric because of the potential there. Besides that, gas, oil or coal for fueling steam power plants is not found so that type construction is more costly.

Dam construction in the Northwest has gradually increased in tempo since World War II with the peak being reached in the 1952 construction season that is just getting under way. Power use has increased too, so that a 1951 summer drought threatened a brown-out (ENR Oct. 18, 1951, p. 128). Fall rains and heavy winter storms have made such a measure unlikely if dam construction schedules are met.

Of importance in this regard are the USBR's Hungry Horse Dam (a 3,000,000 cu yd concrete structure on a Flathead River branch in Montana), Washington Water Power's Cabinet Gorge Dam in Idaho, and Pacific Power and Light's Yale Dam in Washington. All of these are due to contribute new quantities of energy this winter.

However, most long range benefit will come from three Corps of Engineer dams on the main stream of the Columbia. McNary will produce power in 1953, Chief Joseph is expected to contribute in 1956, and work on The Dalles is just getting under way. Each will have about 1,000,000 kw capacity and will cost about $300 million. Many other projects, large and small, are under way in this area.



CATWALKS AT HUNGRY HORSE DAM are repaired preparatory to start of concrete operations this spring. Only 700,000 cy yd of the 3,100,000 cu yd total remain to be placed.

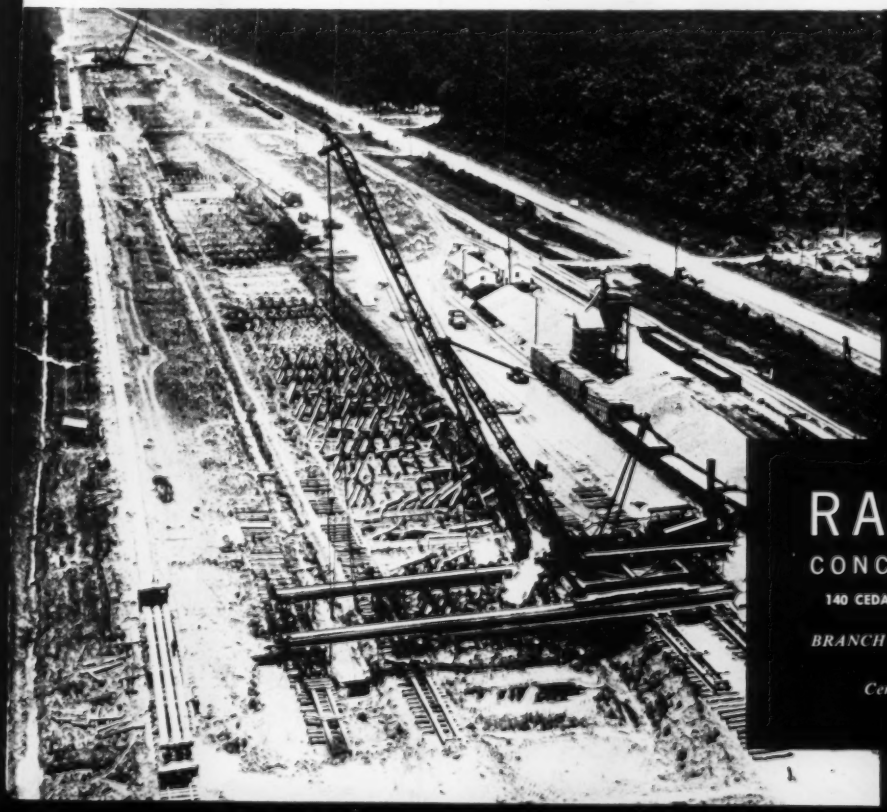
GIANT MORGANZA FLOOD CONTROL JOB

COMPLETED 3 MONTHS AHEAD OF SCHEDULE!

DRIVING FOUNDATION PILES for the gated portion of Morganza, La., Floodway Control Structure is one of the outstanding pile jobs of the year. Skilled planning of operations and use of two of the largest pile drivers ever built have enabled Raymond to complete this work three months ahead of schedule. Structure is supported on 3,734 precast concrete piles 80 to 118 feet in length—practically all driven on a batter.

AROUND THE WORLD · FOUNDED 1891

Design and Construction under Supervision of
COL. CHARLES E. HOLLE, U.S.A., *District Engineer,*
New Orleans District, Corps of Engineers
Department of the Army.



THE SCOPE OF RAYMOND'S ACTIVITIES . . .

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BRANCH OFFICES in the Principal Cities of United States and Central and South America.

Scrapes and hauls 13-yard load

...with help of TIMKEN® bearings

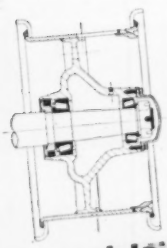
THIS Be-Ge Model ST-85130 Speedhaul scraper can scrape and haul a 13-yard load of dirt. To keep it on the job with less time-out for maintenance and lubrication, The Be-Ge Mfg. Co., Gilroy, Calif., mounts the wheels on Timken® tapered roller bearings.

Be-Ge has found that closures are more effective because Timken bearings keep housing and shaft concentric. Dirt, mud and water are kept out —lubricant is kept in. Lubrication and maintenance time are reduced, scrapers are ready to go when needed.

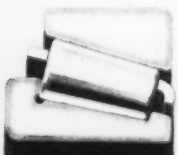
Due to line contact between the rollers and races, Timken bearings have the tremendous load-carrying capacity needed for heavy-duty scrapers. The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. And friction is practically eliminated because of the incredibly smooth surface finish and true rolling motion of Timken bearings.

No other bearing gives you *all* the advantages you get with Timken tapered roller bearings. Make sure you have them in all the equipment you build or buy. Always look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **THE BE-GE MANUFACTURING COMPANY** mounts Timken tapered roller bearings in the wheels of its Speedhaul scraper.



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION